Curriculum Vitae – April 2023

Gonzalo Agustín Álvarez

Doctor in Physics

Personal Information

Nationality:	Argentinean
Date and Place of Birth:	July 22nd, 1976. Comodoro Rivadavia, Argentina
Civil Status:	Married
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Academic Data

- **Head and Establishment of the Nuclear Magnetic Resonance Spectroscopy and Imaging Laboratory** at Medical Physics Department & Institute of Nanoscience and Nanotechnology, Centro Atómico Bariloche, CONICET, Comisión Nacional de Energía Atómica, Bariloche, Argentina (**2019-present**).
- **Investigador Independiente (Independent Researcher) of CONICET** (National Scientific and Technical Research Council - Argentina) (**November 2019-present**).
- **Profesor Adjunto (Adjunct Professor) at Instituto Balseiro, Universidad Nacional de Cuyo**, Centro Atómico Bariloche, Comisión Nacional de Energía Atómica, Bariloche, Argentina (**February 2022-Present**).
- **Investigador Adjunto (Adjunct Researcher) of CONICET** (National Scientific and Technical Research Council - Argentina) (**June 2016/October 2019**).
- **Jefe de Trabajos Prácticos (Equivalent to Assistant Professor) at Instituto Balseiro, Universidad Nacional de Cuyo**, Centro Atómico Bariloche, Comisión Nacional de Energía Atómica, Bariloche, Argentina (**August 2017-January 2022**).
- **Visiting Scientist** at the Weizmann Institute of Science – Chemical Physics Department, Rehovot Israel (**May 2015/December 2015**).
  Host: **Prof. Lucio Frydman.**
- **Marie Curie Senior Fellow of the European Commission and Visiting Scientist** at the Weizmann Institute of Science – Chemical Physics Department, Rehovot Israel (**May 2013/May 2015**).
  Host: **Prof. Lucio Frydman.**
- **Postdoctoral Fellow** at the Weizmann Institute of Science – Chemical Physics Department, Rehovot Israel (**June 2012/April 2013**).
  Host: **Prof. Lucio Frydman.**
- **Associated Scientist** (Forschungsmitarbeiter) at the Fakultät Physik, Experimentelle Physik III – Technische Universität Dortmund, Dortmund, Germany **(March 2011/May 2012).**
  Host: **Prof. Dieter Suter.**
- **Postdoctoral Fellow of the Alexander von Humboldt Foundation** at the Fakultät Physik, Experimentelle Physik III - Universität Dortmund, Dortmund, Germany **(November 2008/February 2011).**
  Host: **Prof. Dieter Suter.**
- **Postdoctoral Fellow of CONICET** at the Facultad de Matemática, Astronomía y Física (FaMAF), Universidad Nacional de Córdoba (UNC), Argentina **(April 2007/ February 2009).**
  Advisor: **Prof. Horacio M. Pastawski.**
- **Profesor Auxiliar de 1º** (**Concurso**) (**Auxiliary Professor**), FaMAF-UNC (**2003-2008**).
- **Ph.D. in Physics (April 2002/April 2007).** Facultad de Matemática, Astronomía y Física, Universidad Nacional de Córdoba, Argentina.
  Doctoral Fellow of CONICET (April 2002-April 2007)
  Thesis: "Decoherence of many-spin systems in NMR: From molecular characterization to an environmentally induced quantum dynamical phase transition".
  e-link: http://www.famaf.unc.edu.ar/~galvarez/Alvarez-thesis-2007.pdf
  arXiv:0705.2350v1
  Advisor: **Prof. Dr. Patricia R. Levstein, Co-Advisor:** **Prof. Dr. Horacio M. Pastawski.**
- **Auxiliar de 2º** (**Concurso**) (**Teaching Assistant**), FaMAF-UNC (**1999-2002**).
- **Degree: Licenciado en Física** (Equivalent to a Master in Science in Physics), March 1996/March **2002**. Facultad de Matemática Astronomía y Física, Universidad Nacional de Córdoba, Argentina.
  Thesis: "Quantum Interferences in the Spin Dynamics Observed by Nuclear Magnetic Resonance."
  Advisors: **Prof. Dr. Patricia R. Levstein**
  Prof. Dr. Horacio M. Pastawski
  Overall Score: 9.11 (scale 1-10).

Honors and Awards

- **1st Honor mention for the Masperi Award 2022, to the best poster based on the Bachelor Thesis.** "Filtros selectivos de dinámicas traslacionales de difusión molecular entre microestructuras de materia blanca con imágenes por resonancia magnética", E. Saidman, G.A. Álvarez. 107° Reunión de la Asociación Física Argentina" (Sept 27-30, **2022**, Bariloche, Argentina).
- **Declaration of the Argentinian National Senate expressing its approval** for the development of a non-invasive method to observe changes at the cellular level through magnetic resonance imaging without the need to resort to biopsies by CONICET researchers **Analía Zwick, Gonzalo Álvarez and team** (**December 9th 2021**, VSP 584.21)**.**

- **Finalist for the Merck-Conicet Award for innovation in health sciences** "Non-invasive histology using quantum information tools with nuclear magnetic resonance imaging" **(August 2021).**
- **Especial mention for the Masperi Award 2018, to the best poster based on the Bachelor Thesis.** "Secuencia de reacople dinámico selectivo utilizada como filtro selectivo de tamaños microestructurales en MRI", M. Capiglioni, A. Zwick A, G.A. Álvarez. 103a Reunión de la Asociación Física Argentina" (Sept 17-19, **2018**, Buenos Aires, Argentina).
- **Marie Curie Intra-European Senior Fellowship for career Development (May 2013/May 2015).**
- **Postdoctoral Fellowship of the Feinberg School of the Weizmann Institute (June 2012-April 2013.)**
- **Honor mention by the committee of the Argentinean Physical Society for the Giambiagi Prize 2009** to the best theoretical PhD thesis presented in Argentina during the years 2007-2008. Link:http://www.fisica.org.ar/?page_id=637
- **Postdoctoral Fellowship of the Alexander von Humboldt Foundation (November 2008/March 2011).**
- **Postdoctoral Fellowship of CONICET (April 2007/November 2008).**
- **Doctoral Fellowship of CONICET** (**April 2002-April 2007**).

Postgraduate Courses

- **"Modern Techniques of Nuclear Magnetic Resonance"** by Prof. Carlos Steren. Facultad de Ciencias Químicas, U.N.C. (May-June **2001**).
- **"Molecular Electronics"** by Dr. Horacio M. Pastawski. Fa,M.A.F., U.N.C. (March-July **2002**). Score: **10** (scale 1-10).
- **"Physics of Nanosystem"**, School of Solid Physics of the Balseiro Institute – Centro Atómico Bariloche (CAB) (October 2002/November **2002**) 90Hs. Score: **9** (scale 1-10).
- **"Quantum Theory of Solids: A approximation to the Many-Body problem"** by Dr. Horacio M. Pastawski. Fa,M.A.F., U.N.C. (March-July **2003**). Score: **10** (scale 1-10).
- **"Introduction to the Critic Phenomenon"** by Dr. Sergio Cannas. Fa,M.A.F., U.N.C. (March-July **2004**).
- **"Averaged Hamiltonians and Floquet Theory: Theory and Applications"** by Dr. Patricia R. Levstein and Dr. Horacio M. Pastawski. Fa,M.A.F., U.N.C. (August-November **2005**).
- **"Quantum Computation and Quantum Information: From theory to Experiments"** by Dr. Dr. Horacio M. Pastawski. Fa.M.A.F., U.N.C. (March-July **2005**). Score: **10** (scale 1-10).

Professional Activities & Managment

- **Head and Establishment of the Nuclear Magnetic Resonance Spectroscopy and Imaging Laboratory** at Medical Physics Department, Centro Atómico Bariloche, Comisión Nacional de Energía Atómica, Bariloche, Argentina (**2019-present**). Creation of a new laboratory established at 2019, with installation of new equipment and services.
- **Member of the Coordination Committee of the Medical Physics Department, Centro Atómico Bariloche, CNEA, Argentina (2016-present).**
- **Reviewer for Science, Nature, Nature Commun., Commun. Phys., Phys. Rev. Lett., Phys. Rev. X, Phys. Rev. B, Phys. Rev A., J. Chem. Phys, J. Magn. Reson, Phil. Trans. R. Soc. A, J. Phys. B, Phys. Chem. Chem. Phys., and AIP Advances.**
- **Advisory Board Member of the European Project PATHOS FET-open "Photonic and nAnomeTric High-sensitivity biO-Sensing" https://pathos-fetopen.weebly.com/ (2019/2023).**
- **Member of the Evaluation Committee of Doctoral and Postdoctoral Fellowships of CONICET (2020-2022).**
- **Advisory Committee Member of the CELFI Center on Translational Medical Physics (CELFI-FIMET), Instituto Balseiro-Centro Atómico Bariloche (2018-present).**
- **Academic Director in Argentina of ERASMUS+ ICM 2019-2023,** higher education student and staff mobility between **the Center for Mind/Brain Sciences, University of Trento (Italy) and the Instituto Balseiro of the Universidad Nacional de Cuyo (Argentina)**.
- **Coordinator of the Cooperation Agreement between the Instituto Balseiro of the Universidad Nacional de Cuyo (Argentina) and the Center for Mind/Brain Sciences, University of Trento (Italy), together with Prof. Dr, Jorge Jovicich (Italy) (2018-present).**
- **Member of the International Liaison Commission of the Instituto Balseiro (2018-present).**
- **Member of the Argentinian Selection Committee for the International Summer Science Institute (ISSI) of the Weizmann Institute (Israel) (2017-present).**
- **Member of the Education & Science Committee of the Argentinian Society of Friends of the Weizmann Institute (Israel) (2017-present).** Director: Florencia Arbiser, President: Jaime Garbansky.
- **Member of the organizing committee of the Medical Physics Division of the Argentinian Physics Society (Sep. 2017-present)**
- **Member of the local organizing committee of Argentinean Physics Society Meeting at Centro Atómico Bariloche, Bariloche, Argentina (2020-2022).**
- **Member of the Advisory committee for the incorporation of new researchers** to the Physics Department, Gerencia de Física, CAB-CNEA (**2020**).
- **Evaluator of research projects of FONDECYT-CHILE (2019)**
- **Member of the Advisory committee for the incorporation of new fellows for technical assistance** at the Medical Physics Department, Gerencia de Física, CAB-CNEA **(2019).**
- **Evaluator for the promotion and incorporation of researchers of CONICET (2018).**
- **Jury of the MRC Poster Award 2018, Taller de Resonancia Magnética Nuclear** (Gustavo Monti, Gonzalo A. Álvarez)
- **Jury of the Masperi Award 2017, Asociación de Física Argentina** (Alejandro Butera, Gonzalo Álvarez y Hernán Rittaco)
- **Member of the Advisory committee for the incorporation of new researchers** for the Medical Physics Department, Gerencia de Física, CAB-CNEA (Drs. Gisela Bocan, Javier Fuhr, Xavier Bertou, Gonzalo Álvarez, Rodolfo Sánchez y Gonzalo Usaj) (May **2017**).
- **Member of the Scientific Committee of the Magnetic Resonance Workshop 2018 (2017/2018).**

Human Resources

Bachelor Students

- **Advisor of the Bachelor Thesis of Ezequiel León Saidman**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2021)**. **Honor mention for the Masperi Award 2022, to the best poster based on the Bachelor/Master Thesis.**
- **Co-Advisor of the Bachelor Thesis of Alvaro Tomas Concha Alvarez Prado (Advisor M.S. Esposito)**, Instituto Balseiro, Universidad de Cuyo, Bariloche, Argentina **(2020-2021)**.
- **Co-Advisor of the Bachelor Thesis of Micaela Kortsarz (Advisor C. Smulski)**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2019)**.
- **Co-Tutor of the Bachelor Thesis of Pablo Jimenez (Advisor J. Jovicich, Co-advisor A. Zwick)**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2019)**.
- **Advisor of the Bachelor Thesis of Bruno Martín Ronchi**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2019)**.
- **Advisor of the Bachelor Thesis of Agustín Dall'alba (Co-tutor A. Zwick)**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2017)**.
- **Advisor of the Bachelor Thesis of Fabricio Lozano (Co-tutor A. Zwick)**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2017)**.
- **Cotutor of the Bachelor Thesis of Milena Capiglioni (Advisor A. Zwick)**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2017)**. **Especial mention for the Masperi Award 2018, to the best poster based on the Bachelor Thesis.**
- **Tutor in the Bachelor Thesis of Hendrik Wittkamp** (Advisor D. Suter), TU Dortmund, Germany **(2010).**

Master Students

- **Advisor of the Master Thesis of Ezequiel León Saidman**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2021-2022)**. **Honor mention for the Masperi Award 2022, to the best poster based on the Bachelor/Master Thesis.**
- **Co-Advisor of the Master Thesis of Micaela Kortsarz (Advisor C. Smulski)**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2019-2021)**.
- **Advisor of the Master Thesis of Bruno Martín Ronchi**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2019-2021)**.
- **Co-Tutor of the Master Thesis of Pablo Jimenez (Advisor J. Jovicich, Co-advisor A. Zwick)**, Instituto Balseiro, Universidad Nacional de Cuyo, Bariloche, Argentina **(2019-2021)**
- **Advisor of the Master Thesis of Fabricio Lozano (Cotutor A. Zwick)**, Instituto Balseiro, Universidad de Nacional Cuyo, Bariloche, Argentina **(2017-2018)**.
- **Cotutor of the Master Thesis of Milena Capiglioni (Advisor A. Zwick)**, Instituto Balseiro, Universidad de Nacional Cuyo, Bariloche, Argentina **(2017-2018)**. **Especial mention for the Masperi Award 2018, to the best poster based on the Master Thesis.**
- **Tutor in the Master Thesis of Ashok Ajoy** (Advisor D. Suter), TU Dortmund, Germany **(2010).**

PhD Students

- **Advisor of the Doctoral fellowship of CONICET of Martín Kuffer (Co-advisor A. Zwick)**, Instituto Balseiro, Universidad de Cuyo & Centro Atómico Bariloche, CNEA, Bariloche Argentina **(2021-present)**.
- **Co-Advisor of the Doctoral fellowship of CONICET of Milena Capiglioni (Advisor Prof. Jorge Jovicich)**, Instituto Balseiro, Universidad de Cuyo, Bariloche, Argentina **(2019)**. Move for a PhD in Switzerland in a MRI lab with a clinical Magnet.
- **Co-Advisor of the Doctoral fellowship of CONICET of Fabricio Lozano (Advisor H.M. Pastawski)**, Facultad de Matemática, Astronomía y Física, Córdoba, Argentina **(2019-present)**.
- **Advisor of the Doctoral Thesis of Melisa Giménez, with Analia Zwick as Co-Advisor of a Doctoral Fellowship of CNEA**, Instituto Balseiro, Universidad de Cuyo, Bariloche Argentina **(2018-present).**
- **Advisor of the Doctoral Thesis of Leonardo Pedraza, Co-advisor of Doctoral Fellowship of CNEA**, Instituto Balseiro, Universidad de Cuyo, Bariloche Argentina **(2018-present).**
- **Advisor of the Doctoral fellowship of CONICET of María Cristina Rodríguez (Co-advisor D. Wisniacki)**, Instituto Balseiro, Universidad de Nacional Cuyo, Bariloche Argentina **(2018-2021)**. Move for a PhD in Canada in a NMR lab.
- **Advisor of the Doctoral fellowship of CONICET of Juan Franco Schiavone**, Instituto Balseiro, Universidad de Nacional Cuyo, Bariloche Argentina **(2018-2019)**.
- **Tutor in PhD Thesis of Mustafa Ahmed Ali** (Advisor D. Suter), TU Dortmund, Germany **(2011-2012).**

Postdoctoral training

- **Advisor of the Postdoctoral fellowship of CONICET of Jesus Fajardo**, Centro Atómico Bariloche, CNEA, Bariloche Argentina **(2020-2022)**.
- **Advisor of the Postdoctoral fellowship of CONICET of Daniel Miravet**, Centro Atómico Bariloche, CNEA, Bariloche Argentina **(2019-2021)**.
- **Advisor of the Postdoctoral fellowship of CONICET of Diana María Betancourth Giraldo**, Centro Atómico Bariloche, CNEA, Bariloche Argentina **(2018-2020)**.
- **Advisor of the Postdoctoral fellowship of CONICET of Federico Daniel Domínguez**, Centro Atómico Bariloche, CNEA, Bariloche Argentina **(2018-2020)**.

Graduated Students

- **Advisor of Alejandra P. Palacios (co-advisor Julien Wist) on the research project** "Simulación de dinámicas de muchos espines con interacciones típicas en resonancia magnética nuclear", Facultad de ciencias naturales y exactas, Universidad del Valle, Santiago de Cali, Colombia **(2015)**.

Undergraduate Students

- **Advisor of one semester undergraduate research project at the lab of Ignacio Lembo (2023).**
- **Advisor of one semester undergraduate research project at the lab of Manuel Avellaneda Molina (2023).**
- **Advisor of one semester undergraduate research project at the lab of Agustin Silva (2020).**
- **Advisor of one semester undergraduate research project at the lab of Martín Kuffer (2019).**

Professional/technical training

- **Co-director of the Professional Assistant Fellowship of Jose Lobera**, Centro Atómico Bariloche, CNEA, Bariloche Argentina (**2019-present**).

Teaching Experience

- **Adjunct Professor at Instituto Balseiro, Universidad Nacional de Cuyo,** Bariloche (**February 2022-present**).
  - Experimental Laboratory III – NMR-MRI (August-December **2022**).
- **Professor of Laboratory Internship - Advanced Experimental Laboratory** (Instituto Balseiro, Bariloche), "Mejorando la resolución de imágenes por resonancia magnética nuclear para estudiar microestructuras en fantomas y tejidos", Student: Ignacio Lembo. Feb-July **2023**.
- **Professor of Laboratory Internship - Advanced Experimental Laboratory** (Instituto Balseiro, Bariloche), "Caracterización de espectro de difusion molecular utilizando gradientes oscilantes en imágenes por resonancia magnética de fantomas y tejidos", Student: Manuel Avellaneda Molina. Feb-July **2023**.
- **Visiting Professor at Center for Mind/Brain Sciences (CIMeC), University of Trento**, Trento, Italy (**May-July 2022**). Teaching & Training on non-invasive characterization of brain microstructure based on diffusion weighting imaging. **Erasmus+ staff mobility & MINCyT-MAECI.**
- **Jefe de Trabajos Prácticos (Equivalent to Assistant Professor) at Instituto Balseiro, Universidad Nacional de Cuyo,** Bariloche (**August 2017-January 2022**).
  - Experimental Laboratory III – X-Ray diffraction (June-December **2017**).
  - Experimental Laboratory III – X-Ray diffraction & MRI (June-December **2018**).
  - Experimental Laboratory III – Earth Field NMR-MRI (June-December **2019**).
  - Experimental Laboratory III – NMR-MRI (March-June **2021**: Reescheduled for COVID Pandemia).
  - Experimental Laboratory III – NMR-MRI (September-December **2021**: Reescheduled for COVID Pandemia).
- **Professor of Laboratory Internship - Experimental IV** (Instituto Balseiro, Bariloche), "Simulaciones cuánticas: Evaluando sistemas cuánticos de muchos cuerpos como sensores", Student: Agustin Silva. Feb-Aug **2020** (Period extended for COVID Pandemia).
- **Invited Professor (ad honorem) in "Caracterización de materiales, Espectroscopia"** (Instituto Balseiro, Bariloche), Two lectures on "Espectroscopia por Resonancia Magnética Nuclear (RMN)". Profs: A. Fainstein,A. Zwick,G.A. Álvarez, Feb **2020**.
- **Professor of Laboratory Internship - Experimental IV** (Instituto Balseiro, Bariloche), "Simulaciones cuánticas: Evaluando sistemas cuánticos de muchos cuerpos como sensores", Student: Martín Kuffer. Feb-Mayo **2019**.
- **Invited Professor (ad honorem) in "Caracterización de materiales, Espectroscopia"** (Instituto Balseiro, Bariloche), Two lectures on "Espectroscopia por Resonancia Magnética Nuclear (RMN)". Profs: A. Fainstein,A. Zwick,G.A. Álvarez, May **2019**.
- **Professor in "Resonancia Magnética Nuclear y Aplicaciones en Imágenes del Cerebro".** (Instituto Balseiro, Bariloche). New postgraduated Curse. Profs. G.A. Alvarez, A. Zwick, L. Frydman (Invited Prof.), J. Jovicich (Inv. Prof.) (Jul-Dec **2018**)
- **Invited Professor (ad honorem) in "Caracterización de materiales, Espectroscopía"** (Instituto Balseiro, Bariloche), Two lectures on "Espectroscopia por Resonancia Magnética Nuclear (RMN)". Profs: A. Fainstein,A. Zwick,G.A. Álvarez, May **2018**.
- **Invited Professor (ad honorem) in "Caracterización de materiales, Espectroscopía"** (Instituto Balseiro, CAB, Bariloche), Two lectures on "Espectroscopia por Resonancia Magnética Nuclear (RMN)". Profs.: A. Fainstein, Analia Zwick, G.A. Álvarez, May **2017**.
- **Invited Professor (ad honorem) in Experimental IV** (Instituto Balseiro, Bariloche), "Análisis colorimetrico de la evolución de equimosis (moretones)". Profs: R.G. Pregliasco,G.A. Álvarez, Student: Caterina Lampertti. Feb-May **2017**.
- **Invited Professor at the Escuela Jose Antonio Balseiro**, "Nuevas tendencias de Investigación en Física Médica", Instituto Balseiro, Bariloche, Argentina, October 3-28, **2016**. Course Title: "Imágenes por Resonancia Magnética Nuclear y Resonancia Magnética Funcional" (1 week duration).
- **Categoría V** en el programa de incentivos – Categorización 2004 (Marzo 2005) (Res. Nº 593/05 de la Comisión Regional de Categorización Centro Oeste).
- **Profesor Auxiliar de 1º** (**Por Concurso**) (**Auxiliary Professor**), FaMAF-UNC (**2003-2008**). (Res. HCD Nº 56/2003, Res. HCD Nº 28/2005, Res. HCD Nº 0012/2005, Res. HCD Nº 59/2005, Res. HCD N° 23/2007, Res. HCD N° 129/2007, Res. HCD N° 168/2007, Res. HCD N° 178/2007).
  - General Physics I - Cs. Químicas - UNC, (March 2003-July 2003).
  - General Physics II (Laboratory) Cs. Químicas - UNC, (August 2003-December 2003).
  - General Physics I - Cs. Químicas - UNC, (March 2004-July 2004).
  - General Physics I - FaMAF - UNC, (August 2004-December 2004).

- Introduction to Physics - FaMAF - UNC, (March 2005-July 2005).
- General Physics I - FaMAF - UNC, (August 2005-December 2005).
- Introduction to Physics - FaMAF - UNC, (March 2006-July 2006).
- General Physics I - FaMAF - UNC, (August 2006-December 2006).
- General Physics II - FaMAF - UNC, (March 2007-July 2007).
- General Physics I - FaMAF - UNC, (August 2007-December 2007).
- General Physics II - FaMAF - UNC, (March 2008-July 2008).
- Laboratory II - Cs. Químicas - UNC, (August 2008).

- **Auxiliar de 2º** (Por **Concurso**) (**Teaching Assistant**), FaMAF-UNC (**1999-2002**). (Res. HCD Nº 121/99, Res. Decanal Nº 22/2000, Res. HCD 44/01).
  - Mathematical Analysis II - FaMAF - UNC, (July 1999 -February 2000).
  - General Physics IV - FaMAF - UNC, (March 2000-July 2000).
  - Modern Physics I - FaMAF - UNC, (August 2000-December 2001).
  - General Physics II - FaMAF - UNC, (March 2001-July 2001).
  - Modern Physics I - FaMAF - UNC, (August 2001-December 2002).

Additional Activities:

- **Evaluator of the Master thesis of Joan Caceres** (Advisor Dr. Daniel Dominguez), Instituto Balseiro, Bariloche, Argentina (2021-**2022**).
- **Evaluator of the Bachelor thesis of Joan Caceres** (Advisor Dr. Daniel Dominguez), Instituto Balseiro, Bariloche, Argentina (Dec 18, **2021**).
- **Evaluator of the Doctoral thesis of Martin Larocca** (Advisor Dr. Diego Wisniacki), Universidad de Buenos Aires, Argentina (Dec 21, **2021**).
- **Observer of the progress of the PhD Thesis of Ignacio Agustín PAPUCCIO FERNANDEZ** (Advisor Dr. Alejandro FAISNTEIN), Instituto Balseiro, Bariloche, Argentina **(2021-present)**.
- **Evaluator of the Doctoral thesis of Duvalier Madrid Usuga** (Advisor Dr. John Henry Reina), Universidad del Valle, Cali, Colombia (**2021**).
- **Substitute Evaluator of the Doctoral thesis of Ana Laura Gramajo** (Advisor Dr. Daniel Dominguez), Instituto Balseiro, Bariloche, Argentina (**2020**).
- **Evaluator of the Master thesis in Medical Physics of Grover Salvatierra Apala (Advisor Marino, Emiliano Alejandro), Instituto Balseiro, Bariloche (2019-2020).**
- **Evaluator of the Doctoral thesis of Viviana Villafañe** (Advisor Dr. Alejandro Fainstein), Instituto Balseiro, Bariloche, Argentina (**2019**).
- **Evaluator of the Master thesis in Medical Physics of Victoria Battellino** (Advisor Daniel Fino), Instituto Balseiro, Bariloche (**2018-2019**).
- **Evaluator of the Master thesis in Medical Physics of Franco Profili** (Advisor MSc. E. Marino), Instituto Balseiro, Bariloche (**2018**).
- **Substitute Evaluator of the Doctoral thesis of Federico Daniel Dominguez** (Advisor Dr. Cecilia E. González), FaMAF, UNC, Córdoba, Argentina (**2018**).
- **Evaluator of the Doctoral thesis of Laura T. Knoll** (Advisor Dr. Miguel A. Larotonda), Universidad de Buenos Aires, Argentina (**2018**).
- **Evaluator of the Master thesis of Alan Ricardo ZAMBRANO HENRÍQUEZ** (Advisor Dr. Adrián Budini), Instituto Balseiro, Bariloche (**2018**).
- **Evaluator of the Master thesis in Medical Physics of Jhon Jairo Ramírez España** (Advisor MSc Daniel Fino), Instituto Balseiro, Bariloche (**2017**).
- **Evaluator of the Master thesis in Medical Physics of Aldana M. Lizarraga** (Advisor MSc Daniel Fino), Instituto Balseiro, Bariloche (**2017**).
- **Evaluator of "Charla de avance" of the Master in Physical Sciences of Alan Ricardo ZAMBRANO HENRÍQUEZ** (Advisor Dr. Adrián Budini), Instituto Balseiro, Bariloche (**2017**).
- **Evaluator of the Bachelor thesis of Timo Paschen** (Advisor: Prof. D. Suter), Technische Universtaet Dortmund (**2010**). "Untersuchung der Nichtlinearitaeten eines optischen Retroreflexaufbaus zur Erzeugung von korrigierten arbitraeren optischen Pulsformen".
- **Evaluator of the Bachelor thesis of Hendrik Wittkamp** (Advisor: Prof. D. Suter), Technische Universtaet Dortmund (**2010**). "Optimierung von geformten Radiofrequenzpulsen".

Outreach & Extension

For more information see https://fisica.cab.cnea.gov.ar/nmrsi/sciencenews

- **Interview for a public release at CLARIN newspaper** "Los "Curie" argentinos: se enamoraron en la facultad y ahora los premian por aplicar la física cuántica a la salud", Buenos Aires (30/10/**2022**). **Interview** to Analia Zwick and Gonzalo A. Alvarez.
- **Una mirada a las tecnologías cuánticas y la medicina.** Gonzalo A. Álvarez in Serie: hojitas de conocimiento, No 51 CIENCIA. Publicación a cargo del Dr. Daniel Pasquevich y la Lic. Stella Maris Spurio (Comisión Nacional de Energía Atómica - Instituto de Energía y Desarrollo Sustentable, Argentina, 2022), pp. 455–456. ISBN: 978-987-1323-12-8.
- **Collaboration preparing a press release for dissemination of our research results in the interview to Martin Kuffer** "Fue la primera vez que tuve un momento '¡ajá!', en el que de repente dos conceptos lejanos se conectan en mi cabeza y sale una explosión de ideas". Noticias del Instituto Balseiro, 06/**2022**
- **Interview for a public release on ADNSUR, Comodoro Rivadavia** (04/09/2021)**. Interview** to Gonzalo Alvarez by Fredi Carreras, 08/**2021**
- **Interview on** Radio Nacional Universidad de La Plata, Programa "ADN Ciencia"
  Interview to Analia Zwick and Gonzalo Alvarez, 08/**2021.**
- **Interview and press release preparation for a public release of our research article:** Desarrollan un método no invasivo para observar cambios a nivel celular mediante resonancias magnéticas. (08/2021). **Interview** to Analia Zwick and Gonzalo Alvarez, CONICET, 08/**2021**

- **Interviews on TV** "Recetas Cuánticas" para mejorar el diagnóstico médico por imágenes
  Interview to Analia Zwick and Gonzalo Alvarez, TV, Telediario Federal, Rio Cuarto, Cordoba 05/**2021**
- **Interviews on TV** "Recetas Cuanticas: el camino a una medicina menos invasiva"
  Interview to Analia Zwick and Gonzalo Alvarez, TV, Canal 7, Mendoza, 02/**2021**
- **Interview on** Radio "El Balseiro en Nacional" por Anibal Blanco (LRA30 FM 95.5 MHz - AM 590 KHz, retransmitido en LRJ403, FM 96.5 MHz, LRH 307, FM 91.1 MHz)
  Interview to Analia Zwick and Gonzalo Alvarez, 12/**2020.**
- **Interview and press release preparation for a public release of our research article on Diario Los Andes: "Recetas cuánticas: cuando los átomos nos dicen qué nos pasa"**
  Interview to Analia Zwick and Gonzalo Alvarez,UNCuyo, **12/2020.**
- **Interview and press release preparation for a public release of our research article:** Física cuántica para mejorar el diagnóstico médico por imágenes
  Interview to Analia Zwick and Gonzalo Alvarez, CONICET, 11/**2020**
- **Help preparing a press release for dissemination of our research results in Germany:**
  Quantentechnologie erhöht die Bildschärfe bei medizinischer Bildgebung deutlich
  Pro-Physik, Germany, 09/**2020**
  Forscher der Technischen Universität Dortmund bringt Quantenphysik und Medizin zusammen
  JuraForum, Germany, 09/**2020**
  Forscher der Technischen Universität Dortmund bringt Quantenphysik und Medizin zusammen
  IDW news, Germany, 09/**2020**
- **Online-meeting with students about being a scientist and the scientist role on the society (age 10-13), Instituto Educativo Alta Cordoba (Jun 2020).** https://www.youtube.com/watch?v=zVZyHfvWW84
- **Online-meeting with students about being a scientist and the scientist role on the society (age 17-18), Colegio Integral (San juan, Jun 2020).**
- **Collaboration for preparing Brief News at the Balseiro Institute home-page (2018-present).**
- **Press release preparation for a public release about the Masperi Award for the poster at AFA related with the Bcs. Thesis of M. Capiglioni (Sept 2018).**
- **Collaboration for preparing dissemination articles about our Lab achievements and activities via the Argentinian Associaction of Friends of the Weizmann Institute (2017-present).**
- **Dissemination in social media about our Lab activities.**
- **Maintance of our Lab homepage and updating our Lab activities, personal home-page and Medical Physics Department home-page.**
- **Interview with APS Physics Magazine: Using Quantum Tricks to Scan the Brain (2019).**
  Q&A: Using Quantum Tricks to Scan the Brain
  Interview to Analia Zwick and Gonzalo Alvarez, APS Physics Magazine **2019**
- **Interview and Press release preparation for a public release about our research results "Trucos" cuánticos para escanear el cerebro (2019) Notinuc CNEA and Conicet Patagonia.**
  "Trucos" cuánticos para escanear el cerebro – APS Physics Magazine
  Interview a Analia Zwick y Gonzalo Alvarez, CONICET Patagonia Norte **2019**
  "Trucos" cuánticos para escanear el cerebro – APS Physics Magazine
  Entrevista a Analia Zwick y Gonzalo Alvarez, Notinuc CNEA **2019**
- **Several public media outreach articles published in Argentina (2017-present). See our group home page link.**
- **Interview and press release preparation for a public release of our research article:** Desarrollaron un novedoso método para "espiar" microestructuras en tejidos biológicos
  Interview to Gonzalo A. Álvarez, Noticias del Instituto Balseiro 18/08/**2017**
- **Help preparing a press release for dissemination of our research results in Germany:**
  Quanten-Computer löst Quanten-Problem :: pro-physik.de
  News Pro-Physik (Alemania) 08/**2015**
  Physiker lösen Problem mit Hilfe von Quanten-Computer der TU Dortmund
  News idw – Informationsdienst Wissenschaft online magazine 08/**2015**
- **Collaboration preparing a press release for dissemination of our research results:**
  Acting Locally, Reporting Globally: From quantum physics to biology, a new approach to magnetic resonance turns protons into "spies"
  News Weizmann Wonder Wander 03/**2014**
- **Collaboration preparing a press release for dissemination of our research results:** Atoms Take a Bath
  News Weizmann Wonder Wander (Israel) 01/**2014**
- **Interview for preparing a public release of our research article:** El físico cordobés que comprobó una predicción de la física cuántica — Universidad Nacional de Córdoba.
  Interview to Gonzalo A. Álvarez, News UNC (Córdoba) 02/**2012**
- **Collaboration preparing a press release for dissemination of our research results:** Taking Quantum Particles' Temperature
  News Weizmann Wonder Wander (Israel) 02/**2011**
- **Interview and press release preparation for a public release of our research article:** Quantum thermometers usher in the big chill
  Interview to Gonzalo A. Álvarez, News News Scientist (UK) 10/**2010**

Language Proficiency

- **Spanish (native language); English (advanced); German (intermediate); French (basic).**

- English Course, Departamento Cultural de la Facultad de Lenguas – U.N.C. (April 1997-November 2000). Certificate guaranteed by cited college.
- French Course, Departamento Cultural de la Facultad de Lenguas – U.N.C. (April 2002 – November 2004). 3rd year finished.
- German Course. Intensive course at the Goethe Institute within the Alexander von Humboldt postdoctoral program, Düsseldorf, Germany. (November 2008-February 2009). Level A1 & A2.

Grants

- **Principal Investigator (Argentina)** of an International Collaboration Project between **Argentina-Israel (MinCyT-MOST) (2023-2024).** CoPI: Lucio Frydman (Argentina). USD 20,000 for each PI.
- **Principal Investigator of FONCyT Grant PICT**-2021-I-A-00070. (**2023/2026**). ARS $10,000,000
- **Collaborator of FONCyT Grant PICT**- 2021-GRF-TI-00134. PI: Analia Zwick (**2023/2026**). ARS $2,000,000
- **Principal Investigator of UNCUYO SIIP Tipo I 2022-C002 (2022/2024).**
- **Co-Principal Investigator of UNCUYO SIIP Tipo I 2022-C030 (2022/2024).**
- **Principal Investigator (Argentina)** of Collaboration Project between **Argentina-Italy (MinCyT-MAECI) (2021-2024).** CoPI: Jorge Jovicich (Italy). Two travels per year per side.
- **Participation of CNEA grant for acquisition of preclinical imaging equipments Biospec 7T, Albira de Bruker** (**2021**). Approx USD 3,000,000.
- **ERASMUS+ ICM 2019-2023** (higher education student and staff mobility). **Academic Director in Argentina**. EURO 30,000.
- **Principal Investigator of FONCyT Grant PICT**-2018-4333 "Raíces". (**2020/2024**). ARS $1,535,625
- **Principal Investigator of UNCUYO SIIP Tipo I 2019, C028 (2019/2022).**
- **Principal Investigator of FONCyT Grant PICT**-2017-3447 "Raíces". (**2019/2023**). ARS $1,008,000
- **Principal Investigator of CONICET Grant PIP** 2017-2021, 112 201701 00486 CO (**2019/2023**).
- **Collaborator of FONCyT Grant PICT**-2017-3699 "Tipo B Joven Investigador, Argentina Innovadora 2020", PI: Dr. A. Zwick. (**2018/2021**).
- Participation in the grant for the Medical Physics Department at CAB-CNEA. **2016-present**
- **CNEA grant for acquisition of a nuclear magnetic resonance spectrometer** (**2015**). USD 1,000,000.
- Participation in a F.I.R.S.T (Bikura program) grant of the Academy of Sciences - Israel Science Foundation; PI: Lucio Frydman and Gershon Kurizki.
- I obtained a **Marie Curie Intra-European Grant for career development** for senior researchers grant no. PIEF-GA-2012-328605. (FP7-PEOPLE-2012-IEF). EUR 220,000.
- My position at TU Dortmund was supported by a DFG (German Research Foundation) grant.
- Participation in a bilateral grant between Argentina and France (ECOS-SUD).
- Participation in a bilateral grant between Argentina and Israel (Antorcha foundation-Weizmann institute).
- Participation in more than 5 grants of different Argentinean governmental agencies including CONICET (National Research Council) and SECYT (National Secretary of Science and Technology).

Publications

Summary: 5 review articles and 41 original articles on international peer-reviewed journals (first author of 18) and **1 under review**, **8 proceedings in conferences (5 accepted to appear soon)**, **a book chapter** and the PhD thesis in the arXiv and in the FaMAF home-page.

1 on Science, 1 on Rev. Mod. Phys., 1 Nature Commun., 1 on Proc. Natl. Acad. Sci. USA, **1 on PRX Quantum**, **7 on Phys. Rev. Lett.** (5 as a first author), **1 on Sci. Rep.**, **3 on Phys. Rev. Applied**, **1 on New J. Phys.**, **2 as Rapid Commun. in Phys. Rev. A**, 14 on Phys. Rev. A, 1 on PLoS ONE, 3 on J. Chem. Phys., 1 on Chem. Phys. Lett., **1 invited review in JMRO, 1 invited review in Phil. Trans. R. Soc. A**, 1 invited article in Ann. Phys., 1 on J. Magn. Reson., 1 on Solid State. Commun., 1 on Physica B, 1 on Quant. Inf. Comm. and 1 review on Technologies. 1 article under review.

The publications 49, 43, 42, 41, 35, 28, 24, 17 and 13 were **featured in the press** (see the respective references for details).

Google Scholar profile: https://scholar.google.com/citations?hl=en&user=LP6RNnwAAAAJ
Citations: **More than 2800 citations**
h-index: 27

11 Publications with more than 100 citations:

Measuring the spectrum of colored noise by dynamical decoupling, G.A. Álvarez, and D. Suter, Phys. Rev. Lett. **107**, 230501 (2011). **285 cites**

Robust dynamical decoupling for quantum computing and quantum memory, A.M. Souza, G.A. Álvarez, and D. Suter, Phys. Rev. Lett. **106**, 240501 (2011). **263 cites**

Protecting quantum information against environmental noise. D. Suter and G.A. Alvarez. Rev. Mod. Phys. **88**, 041001 (2016). **234 cites**

Robust dynamical decoupling, A.M. Souza, G.A. Álvarez, and D. Suter, Phil. Trans. R. Soc. A **370**, 4748 (2012). **186 cites**

Optimal pulse spacing for dynamical decoupling in the presence of a purely-dephasing spin-bath, A. Ajoy, G.A. Álvarez, and D. Suter, Phys. Rev. A **83**, 032303 (2011). **127 cites**

Localization-delocalization transition in the dynamics of dipolar-coupled nuclear spins, G.A. Álvarez, D. Suter, and R. Kaiser. Science **349**, 846 (2015). arXiv:1409.4562. Featured in Infobrief der TU Dortmund (August 2015), datacenter-insider.de, pro-physik.de, Informationsdienst Wissenschaft online magazine, Innovation Report

magazine, and Science Magazine. **132 cites**

Quantum State Transfer and Network Engineering, edited by G. M. Nikolopoulos and I. Jex (Springer Berlin Heidelberg, 2014). Chapter: **Robustness of spin-chain state-transfer schemes,** J. Stolze, G.A. Álvarez, O. Osenda, and A. Zwick in, pp. 149–182. **121 cites**

NMR quantum simulation of localization effects induced by decoherence, G.A. Álvarez and D. Suter, Phys. Rev. Lett. **104**, 230403 (2010). **118 cites**

Performance comparison of dynamical decoupling sequences for a qubit in a rapidly fluctuating spin bath, G.A. Álvarez, A. Ajoy, X. Peng, and D. Suter, Phys. Rev. A **82**, 042306 (2010). **118 cites**

Environmentally induced Quantum Dynamical Phase Transition in the spin swapping operation, G.A. Álvarez, E.P. Danieli, P.R. Levstein, and H.M. Pastawski, J. Chem. Phys. **124**, 194507 (2006). **105 cites**

Local and bulk 13C hyperpolarization in nitrogen-vacancy-centred diamonds at variable fields and orientations. G.A. Álvarez, C.O. Bretschneider, R. Fischer, P. London, H. Kanda, S. Onoda, J. Isoya, D. Gershoni, and L. Frydman. Nat. Commun. **6**, 8456 (2015). **102 cites**

Selected Publications:

Quantum sensing tools to characterize physical, chemical and biological processes with magnetic resonance. A. Zwick, and G.A. Álvarez. Journal of Magnetic Resonance Open **16-17**, 100113 (2023). https://doi.org/10.1016/j.jmro.2023.100113.

Path integral framework for characterizing and controlling decoherence induced by non-stationary environments on a quantum probe. M. Kuffer, A. Zwick, and G.A. Álvarez. PRX Quantum **3**, 020321 (2022). Featured in Noticias del Instituto Balseiro 06/2022.

Noninvasive Quantitative Imaging of Selective Microstructure Sizes via Magnetic Resonance. M. Capiglioni, A. Zwick, P. Jiménez, G.A. Álvarez. Phys. Rev. Applied **15**, 014045 (2021). Featured in Noticias de CONICET (11/08/2021), Radio Nacional Universidad de La Plata - Programa "ADN Ciencia" (08/21), Radio Programa "La ciencia y la salud" por Horacio Sola (08/21), Diario Cronica - Seccion Ciencia - Comodoro Rivadavia (08/21), Radio Universidad UNICEN – Olavarria and in Gacetilla del Instituto de Nanotectologia y Nanociencia 06/2021, ADNSUR (09/2021), and others.

Precision limits of tissue microstructure characterization by Magnetic Resonance Imaging. A. Zwick, D.Suter, G. Kurizki, and G.A. Álvarez. Phys. Rev. Applied **14**, 024088 (2020). Featured in Noticias de CONICET, Noticias del Instituto Balseiro, Revista Naturaleza y Tecnología, Radio UNCo CALF Interview, Radio Nacional Bariloche Interview in **El Balseiro en Nacional**, Diario Los Andes, pro-physik.de, JuraForum, idw – Informationsdienst Wissenschaft, AZO Quantum, and others.

Protecting quantum information against environmental noise. D. Suter and G.A. Alvarez. Rev. Mod. Phys. **88**, 041001 (2016).

Maximizing information on the environment by dynamically controlled qubit probes. A. Zwick, G.A. Álvarez, and G. Kurizki. Phys. Rev. Applied **5**, 014007 (2016).

Local and bulk 13C hyperpolarization in nitrogen-vacancy-centred diamonds at variable fields and orientations. G.A. Álvarez, C.O. Bretschneider, R. Fischer, P. London, H. Kanda, S. Onoda, J. Isoya, D. Gershoni, and L. Frydman. Nat. Commun. **6**, 8456 (2015).

Localization-delocalization transition in the dynamics of dipolar-coupled nuclear spins, G.A. Álvarez, D. Suter, and R. Kaiser. Science **349**, 846 (2015). arXiv:1409.4562. Featured in Infobrief der TU Dortmund (August 2015), datacenter-insider.de, pro-physik.de, Informationsdienst Wissenschaft online magazine, Innovation Report magazine, and Science Magazine.

Coherent dynamical recoupling of diffusion-driven decoherence in magnetic resonance, G.A. Álvarez, N. Shemesh, and L. Frydman, Phys. Rev. Lett. **111**, 080404 (2013). Featured in the Interface magazine (winter 2014)

Measuring the spectrum of colored noise by dynamical decoupling, G.A. Álvarez, and D. Suter, Phys. Rev. Lett. **107**, 230501 (2011).

Robust dynamical decoupling for quantum computing and quantum memory, A.M. Souza, G.A. Álvarez, and D. Suter, Phys. Rev. Lett. **106**, 240501 (2011).

Zeno and anti-Zeno polarization control of spin-ensembles by induced dephasing, G.A. Álvarez, D.D.B. Rao, L. Frydman, and G. Kurizki, Phys. Rev. Lett. **105**, 160401 (2010). Featured in the New Scientist Magazine (10 October 2010), in the Interface magazine (spring/summer 2011), in "Novedades e información de cyt - UNC" (15.02.2012), and in the Interface magazine (winter 2014).

NMR quantum simulation of localization effects induced by decoherence, G.A. Álvarez and D. Suter, Phys. Rev. Lett. **104**, 230403 (2010).

Full list of publications:

57. Cumulant expansion framework for internal gradient distributions tensors. L.A. Pedraza Perez, and G.A. Álvarez. arXiv:2304.02065. Under review (2023).

56. Quantum sensing tools to characterize physical, chemical and biological processes with magnetic resonance. A. Zwick, and G.A. Álvarez. Journal of Magnetic Resonance Open **16-17**, 100113 (2023). https://doi.org/10.1016/j.jmro.2023.100113.

55. Selective filters of translational molecular diffusion dynamics in white matter microstructures with preclinical and clinical MRI. E.L. Saidman, A. Zwick, S. Tambalo, T. Feiweier, J. Jovicich, G.A. Álvarez. Proc. Intl. Soc. Mag. Reson. Med. (To appear 2023).

54. Framework for Internal Gradient Distribution Tensors to characterize tissue microstructure with MRI. L.A. Pedraza Pérez, G.A. Álvarez. Proc. Intl. Soc. Mag. Reson. Med. (To appear 2023).

53. Evaluation of reliability and self-consistency of compartment size-distribution estimations by oscillating gradient spin-echo sequences. M.L. Gimenez, L.A. Pedraza Pérez, G.A. Álvarez. Proc. Intl. Soc. Mag. Reson. Med. (To appear 2023).

52. Optimization of non-uniform oscillating gradient spin echo sequences for selective microstructure-size imaging. M. Capiglioni, A. Zwick, G.A. Proc. Intl. Soc. Mag. Reson. Med. (To appear 2023).

51. Optimization method for estimating tissue microstructure size-distributions with diffusion weighted imaging. P.J. Jimenez, A. Zwick, G.A. Álvarez. Proc. Intl. Soc. Mag. Reson. Med. (To appear 2023).

50. Una mirada a las tecnologías cuánticas y la medicina. G.A. Álvarez in Serie: hojitas de conocimiento, No 51 CIENCIA. Publicación a cargo del Dr. Daniel Pasquevich y la Lic. Stella Maris Spurio (Comisión Nacional de Energía Atómica - Instituto de Energía y Desarrollo Sustentable, Argentina, 2022), pp. 455–456. ISBN: 978-987-1323-12-8.

49. Path integral framework for characterizing and controlling decoherence induced by non-stationary environments on a quantum probe. M. Kuffer, A. Zwick, and G.A. Álvarez. PRX Quantum **3**, 020321 (2022). arXiv:2203.05063. Featured in Noticias del Instituto Balseiro 06/2022.

48. Dynamics of quantum information scrambling under decoherence effects measured via active spin clusters. F.D. Domínguez, and G.A. Álvarez. Phys. Rev. A **104**, 062406 (2021). arXiv:2107.03870.

47. Decoherence scaling transition in the dynamics of quantum information scrambling. F.D. Domínguez, M.C. Rodríguez, R. Kaiser, D. Suter, and G.A. Álvarez. Phys. Rev. A **104**, 012402 (2021). arXiv:2005.12361.

46. Internal gradient distribution tensors of white matter tracts models. J.E. Fajardo, G.A. Álvarez. Proc. Intl. Soc. Mag. Reson. Med. **29**, 1716 (2021).

45. Selective microstructure-size filters for non-invasive quantitative MRI. M. Capiglioni, A. Zwick, P. Jiménez, G.A. Alvarez. Proc. Intl. Soc. Mag. Reson. Med. **29**, 2036 (2021).

44. Microstructure size-distribution estimations with smooth and sharp non-uniform oscillating gradient spin-echo modulations. M. Giménez, P. Jiménez, L. Pedraza, D. Betancourth, A. Zwick, G.A. Álvarez. Proc. Intl. Soc. Mag. Reson. Med. **29**, 3418 (2021).

43. Noninvasive Quantitative Imaging of Selective Microstructure Sizes via Magnetic Resonance. M. Capiglioni, A. Zwick, P. Jiménez, G.A. Álvarez. Phys. Rev. Applied **15**, 014045 (2021). Featured in Noticias de CONICET (11/08/2021), Radio Nacional Universidad de La Plata - Programa "ADN Ciencia" (08/21), Radio Programa "La ciencia y la salud" por Horacio Sola (08/21), Diario Cronica - Seccion Ciencia - Comodoro Rivadavia (08/21), Radio Universidad UNICEN – Olavarria and in Gacetilla del Instituto de Nanotectologia y Nanociencia 06/2021, ADNSUR (09/2021), and others.

42. Precision limits of tissue microstructure characterization by Magnetic Resonance Imaging. A. Zwick, D.Suter, G. Kurizki, and G.A. Álvarez. Phys. Rev. Applied **14**, 024088 (2020). Featured in Noticias de CONICET, Noticias del Instituto Balseiro, Revista Naturaleza y Tecnología, Radio UNCo CALF Interview, Radio Nacional Bariloche Interview in **El Balseiro en Nacional**, Diario Los Andes, pro-physik.de, JuraForum, idw – Informationsdienst Wissenschaft, AZO Quantum, and others.

41. Internal gradient distributions: A susceptibility-derived tensor delivering morphologies by magnetic resonance. G.A. Álvarez, N. Shemesh, and L. Frydman. Scientific Reports **7**, 3311 (2017). Featured in Noticias del Instituto Balseiro, and árticulo de divulgación.

40. Quantum sensing of noisy and complex systems under dynamical control. G. Kurizki, G.A. Álvarez, and A. Zwick. Technologies **5**, 1 (2017).

39. Criticality of environmental information obtainable by dynamically controlled quantum probes. A. Zwick, G.A. Álvarez, and G. Kurizki. Phys. Rev. A **94**, 042122 (2016).

38. Protecting quantum information against environmental noise. D. Suter and G.A. Alvarez. Rev. Mod. Phys. **88**, 041001 (2016).

37. Maximizing information on the environment by dynamically controlled qubit probes. A. Zwick, G.A. Álvarez, and G. Kurizki. Phys. Rev. Applied **5**, 014007 (2016). arXiv:1507.03281.

36. Local and bulk 13C hyperpolarization in nitrogen-vacancy-centred diamonds at variable fields and orientations. G.A. Álvarez, C.O. Bretschneider, R. Fischer, P. London, H. Kanda, S. Onoda, J. Isoya, D. Gershoni, and L. Frydman. Nat. Commun. **6**, 8456 (2015). arXiv:1412.8635.

35. Localization-delocalization transition in the dynamics of dipolar-coupled nuclear spins, G.A. Álvarez, D. Suter, and R. Kaiser. Science **349**, 846 (2015). arXiv:1409.4562. Featured in Infobrief der TU Dortmund (August 2015), datacenter-insider.de, pro-physik.de, Informationsdienst Wissenschaft online magazine, Innovation Report magazine, and Science Magazine.

34. Size distribution imaging by Non-Uniform Oscillating-Gradient Spin Echo (NOGSE) MRI, N. Shemesh, G.A. Álvarez, and L. Frydman, PLoS ONE **10**, e0133201 (2015).

33. Quantum state transfer in disordered spin chains: How much engineering is reasonable?, A. Zwick, G.A. Álvarez, J. Stolze, and O. Osenda, Quant. Inf. Comm. **15**, 582 (2015). arXiv:1306.1695.

32. Diffusion-assisted Selective Dynamical Recoupling: A new approach to measure background gradients in magnetic resonance, G.A. Álvarez, N. Shemesh, and L. Frydman, J. Chem. Phys. **140**, 084205 (2014).

31. Optimized dynamical control of state transfer through noisy spin chains, A. Zwick, G.A. Álvarez, G. Bensky, and G. Kurizki, New J. Phys. **16**, 065021 (2014).

30. Robustness of spin-chain state-transfer schemes, J. Stolze, G.A. Álvarez, O. Osenda, and A. Zwick in Quantum State Transfer and Network Engineering, edited by G. M. Nikolopoulos and I. Jex (Springer Berlin Heidelberg, 2014), pp. 149–182. Partly published in arXiv:1502.04879.

29. Measuring small compartment dimensions by probing diffusion dynamics via Non-uniform Oscillating-Gradient Spin-Echo (NOGSE) NMR, N. Shemesh, G.A. Álvarez, and L. Frydman, J. Magn. Reson. **237**, 49 (2013).

28. Coherent dynamical recoupling of diffusion-driven decoherence in magnetic resonance, G.A. Álvarez, N. Shemesh, and L. Frydman, Phys. Rev. Lett. **111**, 080404 (2013). Featured in the Interface magazine (winter 2014).

27. Quantum simulations of localization effects with dipolar interactions, G.A. Álvarez, R. Kaiser, and D. Suter, Ann. Phys. **525**, 833 (2013). Special Issue on "Quantum Simulations", featuring review papers written by last year's Nobel Prize winners describing their foundational work (Wineland and Haroche). Issue edited by: Rainer Blatt, Immanuel Bloch, Ignacio Cirac, Peter Zoller.

26. Robustness of dynamical decoupling sequences, M.A.A. Ahmed, G.A. Álvarez, and D. Suter, Phys. Rev. A **87**, 042309 (2013).

25. Experimental protection of quantum gates against decoherence and control errors, A.M. Souza, G.A. Álvarez, and D. Suter, Phys. Rev. A (Rapid Commun.) **86**, 050301 (2012).

24. Iterative rotation scheme for robust dynamical decoupling, G.A. Álvarez, A.M. Souza, and D. Suter, Phys. Rev. A **85**, 052324 (2012). Featured in Phys. Rev. A Kaleidoscope (May 2012).

23. Shift-driven modulations of spin echo signals, P.E.S. Smith, G. Bensky, G.A. Álvarez, G. Kurizki, and L. Frydman, Proc. Natl. Acad. Sci. U. S. A. **109**, 5958 (2012).

22. Spin chains for robust state transfer: Modified boundary couplings versus completely engineered chains, A. Zwick, G.A. Álvarez, J. Stolze, and O. Osenda, Phys. Rev. A **85**, 012318 (2012).

21. Robust dynamical decoupling, A.M. Souza, G.A. Álvarez, and D. Suter, Phil. Trans. R. Soc. A **370**, 4748 (2012).

20. Effects of time-reversal symmetry in dynamical decoupling, A.M. Souza, G.A. Álvarez, and D. Suter, Phys. Rev. A **85**, 032306 (2012).

19. Controlling spin-spin network dynamics by repeated projective measurements, C.O. Bretschneider, G.A. Álvarez, G. Kurizki, and L. Frydman, Phys. Rev. Lett. **108**, 140403 (2012).

18. Measuring the spectrum of colored noise by dynamical decoupling, G.A. Álvarez, and D. Suter, Phys. Rev. Lett. **107**, 230501 (2011).

17. Robustness of spin-coupling distributions for perfect quantum state transfer, A. Zwick, G.A. Álvarez, J. Stolze, and O. Osenda, Phys. Rev. A **84**, 022311 (2011). Featured in Phys. Rev. A Kaleidoscope (August 2011).

16. Robust dynamical decoupling for quantum computing and quantum memory, A.M. Souza, G.A. Álvarez, and D. Suter, Phys. Rev. Lett. **106**, 240501 (2011).

15. Localization effects induced by decoherence in superpositions of many-spin quantum states, G.A. Álvarez and D. Suter, Phys. Rev. A **84**, 012320 (2011).

14. Optimal pulse spacing for dynamical decoupling in the presence of a purely-dephasing spin-bath, A. Ajoy, G.A. Álvarez, and D. Suter, Phys. Rev. A **83**, 032303 (2011).

13. Zeno and anti-Zeno polarization control of spin-ensembles by induced dephasing, G.A. Álvarez, D.D.B. Rao, L. Frydman, and G. Kurizki, Phys. Rev. Lett. **105**, 160401 (2010). Featured in the New Scientist Magazine (10 October 2010), in the Interface magazine (spring/summer 2011), in "Novedades e información de cyt - UNC" (15.02.2012), and in the Interface magazine (winter 2014).

12. Performance comparison of dynamical decoupling sequences for a qubit in a rapidly fluctuating spin bath, G.A. Álvarez, A. Ajoy, X. Peng, and D. Suter, Phys. Rev. A **82**, 042306 (2010).

11. Decoherence as attenuation of mesoscopic echoes in a spin-chain channel, G.A. Álvarez, E.P. Danieli, P.R. Levstein, and H.M. Pastawski, Phys. Rev. A **82**, 012310 (2010).

10. NMR quantum simulation of localization effects induced by decoherence, G.A. Álvarez and D. Suter, Phys. Rev. Lett. **104**, 230403 (2010).

9. Perfect state transfers based on selective quantum interferences within a complex spin network, G.A. Álvarez, M. Mishkovsky, E.P. Danieli, P.R. Levstein, H.M. Pastawski, and L. Frydman, Phys. Rev. A (Rapid Commun.) **81**, 060302 (2010).

8. Quantum parallelism as a tool for ensemble spin dynamics calculations, G.A. Álvarez, E.P. Danieli, P.R. Levstein, and H.M. Pastawski, Phys. Rev. Lett. **101**, 120503 (2008).

7. Decoherence of many-spin systems in NMR: From molecular characterization to an environmentally induced quantum dynamical phase transition G.A. Álvarez Ph.D thesis, Universidad Nacional de Córdoba, 2007. arXiv:0705.2350.
Advisor: Prof. Dr. P.R. Levstein, Co-Advisor: Prof. Dr. H.M. Pastawski Examining Committee: Prof. Dr. Carlos A. Balseiro, Prof. Dr. Guido A. Raggio, Prof. Dr. Juan Pablo Paz, and Prof. Dr. Pablo Serra.

6. Decoherence under many-body system-environment interactions: a stroboscopic representation based on a fictitiously homogenized interaction rate, G.A. Álvarez, E.P. Danieli, P.R. Levstein, and H.M. Pastawski, Phys. Rev. A **75**, 062116 (2007).

5. Signatures of a quantum dynamical phase transition in a three-spin system in presence of a spin

environment, G.A. Álvarez, P.R. Levstein, and H.M. Pastawski, Physica B **398**, 438 (2007).

4. Quantum dynamical phase transition in a system with many-body interactions E.P. Danieli, G.A. Álvarez, P.R. Levstein, and H.M. Pastawski, Solid State Commun. **141**, 422 (2007).

3. Environmentally induced Quantum Dynamical Phase Transition in the spin swapping operation, G.A. Álvarez, E.P. Danieli, P.R. Levstein, and H.M. Pastawski, J. Chem. Phys. **124**, 194507 (2006).

2. Quantum dynamics under coherent and incoherent effects of a spin bath in the Keldish formalism: application to a spin swapping operation, E.P. Danieli, H.M. Pastawski, and G.A. Álvarez, Chem. Phys. Lett. **402**, 88 (2005).

1. Many-spin quantum dynamics during cross polarization in 8CB, A.K. Chattah, G.A. Álvarez, P.R. Levstein, F.M. Cucchietti, H.M. Pastawski, J. Raya and J. Hirschinger, J. Chem. Phys. **119**, 7943 (2003).

Seminars and Talks

30 Seminars as invited speaker in conferences, 16 contributed talks at conferences and 33 invited seminars in different Universities and Institutions:

1. **"Spin dynamics and Nuclear Magnetic Resonance in Rings and Chains"** (Dinámica de Espines y Resonancia Magnética Nuclear en Anillos y Cadenas). Seminar given at Facultad de Matemática, Astronomía y Física - UNC (March **2002**).
2. **"Decoherence during ^{1}H-^{13}C Cross Polarization"**. Seminar given at Laboratoire de RMN de la Matière Condesée, Institut Le Bel de l´Université Louis Pasteur,Strasbourg, France. Invited by Prof. Dr. J. Hirschinger (November **2003**).
3. **"Decoherence during a Swapping Operation"**. Contributed talk at Pan American Advanced Studied Institute (PASI) and Workshop on Physics of Information – PASI 2003, Búzios, Brasil (December **2003**).
4. **"Quantum seeing in the darkness: "Interaction-free" measurements, about how Perseus could have seen Medusa"** (Visión cuántica en la oscuridad: Mediciones "sin interactuar", sobre cómo Perseo podría haber visto a Medusa). Seminar given at Facultad de Matemática, Astronomía y Física - UNC (March **2007**).
5. **"Counterfactual quantum computation: an application of "interaction-free" measurements"** (Computación Cuántica Contrafactual: Una aplicación de las mediciones "sin interacción"). Seminar given at Facultad de Matemática, Astronomía y Física - UNC (March **2007**).
6. **"Directional polarization transfer in a branched spin network by selective pruning: an NMR proposal".** Contributed talk at quantum information school and workshop – Paraty 2007, Paraty, Brazil (August **2007**).
7. **"Directional polarization transfer in a branched spin network by selective pruning: an NMR proposal".** Seminar given at Fachbereich Physik, Universität Dortmund, Dortmund, Germany. Invited by Prof. Dr. Dieter Suter (August **2007**).
8. **"Directional polarization transfer in a branched spin network by selective pruning: an NMR proposal".** Seminar given at Macromolecular Chemistry, RWTH Aachen, Sammelbau Chemie, Aachen, Germany. Invited by Prof. Dr. Bernhard Blümich and Dr. Federico Casanova (September **2007**).
9. **"Quantum parallelism as a tool for ensemble spin dynamics calculations".** Seminar given at Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel. Invited by Prof. Dr. Lucio Frydman (March **2008**).
10. **"Directional polarization transfer in a branched spin network by selective pruning: an NMR proposal".** Seminar given at Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel. Invited by Prof. Dr. Lucio Frydman (March **2008**).
11. **"Quantum parallelism as a tool for ensemble spin dynamics calculations".** Seminar given at a mini-workshop organized by Universidad Autónoma de Barcelona (UAB), Universidad de Barcelona (UB) and Institut de Ciències Fotòniques (ICFO), Barcelona, Spain. Invited by Prof. Dr. Maciej Lewenstein (March **2008**).
12. **"Decoherence in many-spin systems"**. Seminar given at Tel Aviv University, Tel Aviv, Israel. Invited by Prof. Abraham Nitzan (October **2008**).
13. **"Characterization of the decoherence rate of large quantum registers based on variable system-environment interactions"**. Invited Speaker at the Network Meeting of the Alexander von Humboldt Foundation, Bonn, Germany (April **2009**).
14. **"Tailored thermodynamics and directional perfect state transfer: playing with time interferences".** Seminar given at Fakultät Physik, Universität Dortmund, Dortmund, Germany. Invited by Prof. Dr. Dieter Suter (May **2009**).
15. **"Quantum parallelism as a tool for ensemble spin dynamics calculations".** Seminar given at Fakultät Physik, Universität Dortmund, Dortmund, Germany. Invited by Prof. Dr. Dieter Suter (June **2009**).
16. **"Steering the equilibrium of quantum bits in a spin bath by projective measurements".** Seminar given at City Collegue of New York, New York, USA. Invited by Prof. Dr. Carlos Meriles (October **2009**).
17. **"On the pursuit of the best dynamical decoupling sequence in presence of a spin-bath".** Seminar given at Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel. Invited by Prof. Dr. Lucio Frydman (March **2011**).
18. **"Quantum dynamical phase transitions and localization effects induced by decoherence".** Invited speaker at the international workshop on Quantum Physics with Non-Hermitian Operators, Dresden, Germany (June **2011**).
19. **"Tailoring thermodynamics with NMR quantum computers: Understanding and characterizing quantum systems".** Seminar given at the school of physics and astronomy, University of Nottingham, Nottingham, United Kingdom. Invited by Prof. Dr. Juan P. Garrahan (October **2011**).
20. **"Tailoring thermodynamics with NMR quantum computers: Understanding and characterizing quantum systems".** Seminar given at the Faculty of Astronomy, Mathematics and Physics, National University of Córdoba, Córdoba, Argentina. Invited by Prof. Dr. Horacio M. Pastawski (November **2011**).

21. **"Dynamical decoupling noise spectroscopy".** Informal Seminar given at the University of Southern California, Los Angeles, USA. Invited by Prof. Dr. Daniel Lidar (December **2011**).
22. **"Dynamical decoupling noise spectroscopy".** Contributed talk at the "Second international conference on quantum error correction", University of Southern California, Los Angeles, USA (December **2011**).
23. **"Tailoring thermodynamics with NMR quantum computers: Understanding and characterizing quantum systems".** Seminar given at the Institut non linéaire de Nice (INLN), Université Nice Sophia Antipolis, Valbonne, France. Invited by Prof. Dr. Robin Kaiser (February **2012**).
24. **"Tailoring decoherence with NMR for controlling and characterizing quantum systems".** Invited speaker at the "quantum innovators workshop" at IQC, Waterloo, Canada (Sept. **2012**).
25. **"NMR quantum simulations of localization effects".** Seminar given at the Institut non linéaire de Nice (INLN), Université Nice Sophia Antipolis, Valbonne, France. Invited by Prof. Dr. Robin Kaiser (April **2013**).
26. **"Random – but not quite: exploiting quantum decoherence as a tool for characterizing unknown systems"**. Invited speaker at the "IV Quantum Information Workshop – Paraty 2013", Paraty, Brazil (August **2013**).
27. **"Random – but not quite: exploiting quantum decoherence as a tool for characterizing unknown systems"**. Seminar given at the Centro Brasileiro de Pesquisas Físicas (CBPF), Rio de Janeiro, Brazil. Invited by Prof. Alexandre M. de Souza (August **2013**).
28. **"Aleatorio, pero no tanto: cómo usar la decoherencia cuántica como una herramienta para sondear sistemas".** Seminar given at the Faculty of Astronomy, Mathematics and Physics, National University of Córdoba, Córdoba, Argentina. Invited by Prof. Dr. Horacio M. Pastawski (August **2013**).
29. **"Coherent dynamical recoupling of diffusion-driven decoherence in magnetic resonance"**. Contributed talk at "The 12th International Bologna Conference on Magnetic Resonance in Porous Media (MRPM12)", Victoria University of Wellington, Wellington, New Zealand (February **2014**).
30. **"Experimental evidence of an Anderson-like transition of many-body localization by competing dipolar interactions".** Seminar given at the Institut non linéaire de Nice (INLN), Université Nice Sophia Antipolis, Valbonne, France. Invited by Prof. Dr. Robin Kaiser (April **2014**).
31. **"Aleatorio, pero no tanto: cómo usar la decoherencia cuántica como una herramienta para sondear sistemas".** Invited speaker (teleconference) at the TREFEMAC XII, Bahía Blanca, Argentina (May 7-9, **2014**).
32. **"Critical phase transition of coherences in many-body systems with dipolar interactions evidenced by time-reversal echoes".** Contributed talk at the International Workshop "Echoes in Complex Systems", Max Planck Institute for the Physics of Complex Systems, Dresden, Germany (**2014**).
33. **"Local and Bulk 13C Hyperpolarization in NV-Centered Diamonds at Variable Fields and Orientations: A step towards polarizing powders"**. Invited talk at the Schulich Symposium "Modern Electron Spin Resonance - New Methodologies and new Applications", Technion, Haifa, Israel (Feb. **2015**).
34. **"Quantum decoherence control as a tool for characterizing unknown systems and steering dynamics"**. Seminar given at the City Collegue of New York, New York, USA. Invited by Prof. Dr. Carlos Meriles (April **2015**).
35. **"Local and Bulk 13C Hyperpolarization in NV-Centered Diamonds at Variable Fields and Orientations: A step towards polarizing powders"**. Contributed talk at the 56th Experimental Nuclear Magnetic Resonance Conference, Asilomar Conference Center, Pacific Grove, California, USA (April **2015**).
36. **"Quantum decoherence as a tool for characterizing unknown systems and steering dynamics"**. Seminar given at the Massachusetts Institute of Technology, Cambridge, Massachusetts, USA. Invited by Prof. Dr. Paola Cappellaro (April **2015**).
37. **"Localization effects and hyperpolarization in many-spin networks"**. Seminar given at the Harvard University, Cambridge, Massachusetts, USA. Invited by Prof. Dr. Mikhail Lukin (April **2015**).
38. **"Random – but not quite: Exploiting quantum decoherence as a tool for characterizing unknown systems".** Seminar given at Fachbereich Physik, Technische Universität Dortmund, Dortmund, Germany. Invited by Prof. Dr. Dieter Suter (November **2015**).
39. **"Localization effects and hyperpolarization in many-spin networks".** Seminar given at the 3rd Physikalisches Institut, Universität Stuttgart, Stuttgart, Germany. Invited by Prof. Dr. Jörg Wrachtrup (December **2015**).
40. **"Quantum Simulations: Localization-delocalization transition in the dynamics of large quantum systems".** Seminar given at Mahidol University, Bangkok, Thailand. Invited by Prof. Dr. Sujin Suwanna (March **2016**).
41. **"The loss of quantum information as a tool for characterizing and controlling systems".** Seminar given at Mahidol University, Bangkok, Thailand. Invited by Prof. Dr. Sujin Suwanna (April **2016**).
42. **"Perdiendo información cuántica como herramienta para caracterizar y controlar sistemas cuánticos"**. Seminar given at the Faculty of Astronomy, Mathematics and Physics, National University of Córdoba, Córdoba, Argentina. Invited by Prof. Dr. Horacio M. Pastawski (June **2016**).
43. **"Sensores cuánticos: tecnologías y aplicaciones cuánticas en espectroscopia e imágenes por resonancia magnética nuclear"**. Colloquium at the Balseiro Institute (Instituto Balseiro), Bariloche, Argentina (August **2016**).
44. **"Quantum decoherence control as a tool for characterizing physical, chemical and biological processes"**. Seminar given at Universidad del Valle, Cali, Colombia. Invited by Prof. Dr. Julien Wist (September 30, **2016**).
45. **"Selective dynamical recoupling of di!usion-driven relaxation in magnetic resonance"**. Invited Speaker at the VII Ibero-American NMR meeting, Cartagena de Indias, Colombia (3-6 October **2016**).
46. **"Imágenes por Resonancia Magnética Nuclear y Resonancia Magnética Funcional"**. Invited Professor at the Escuela Jose Antonio Balseiro, "Nuevas tendencias de Investigación en Física Médica", Instituto Balseiro, Bariloche, Argentina (October 3-28, **2016**).
47. **"NMR-MRI in Bariloche: Quantum sensing of biological processes and structures"**. Invited Speaker at the Workshop of the Escuela Jose Antonio Balseiro, "Nuevas tendencias de Investigación en Física Médica", Instituto Balseiro, Bariloche, Argentina (October 3-28, **2016**).
48. **"Quantum Sensors"**. Invited Speaker at Frontiers In Physical Sciences, Buenos Aires, Argentina (November 14-18, **2016**).

49. **"Paving the way for quantum technologies"**. Invited to give an honor talk to Prof. Dieter Suter, Festkolloquium held in honor of Prof. Dieter Suter on the occasion of his 60th birthday, Dortmund, Germany (November 22nd, **2016**).
50. **"Quantum Simulations: Localization-delocalization transition in the dynamics of large quantum systems"**. Contributed talk at the "Workshop on Driven Quantum Systems", S. C. de Bariloche, Argentina (Nov. 28-Dec. 2, **2016**).
51. **"Boosting nuclear-spin signals by combining magnetic resonance, lasers and diamonds"**. Invited Speaker at the Workshop "What is bright with light", S. C. de Bariloche, Argentina (Dec. 5-9, **2016**).
52. **"Sensores cuánticos: tecnologías y aplicaciones cuánticas en espectroscopia e imágenes por resonancia magnética nuclear"**, Seminar given at Universidad Nacional de Buenos Aires, Facultad de Ciencias Exactas y Naturales, Buenos Aires, Argentina. Invited by Prof. Dr. Diego Wisniacki and Prof. Dr. Juan Pablo Paz (April 26, **2017**).
53. **"Mejorando la resolución de imágenes por resonancia magnética nuclear para estudiar microestructuras en tejidos y órganos"**, Contributed talk at "Reunión INN CAB-CAC", Bariloche, Argentina (May 21, **2017**).
54. **"Quantum Simulations: Localization-delocalization transition in the dynamics of large quantum systems"**. Condensed matter seminar at Centro Atómico Bariloche, CNEA, Bariloche, Argentina. Invited by Prof. Dr. Nestor Haberkorn (June 1, **2017**).
55. **"Abriendo caminos para las tecnologías cuánticas",** Invited as Plenary Speaker at "102 Reunión Nacional de la Asociación Física Argentina", La Plata, Argentina, Sep. **2017**.
56. **"Mejorando la resolución de imágenes por resonancia magnética nuclear para estudiar microestructuras en tejidos y órganos",** Invited Speaker at "División Física Médica de la 102 Reunión Nacional de la Asociación Física Argentina", La Plata, Argentina, Sep. **2017**.
57. **"Tecnologías cuánticas en espectroscopia e imágenes por resonancia magnética nuclear"**, Invited Speaker at the "IV Taller de Resonancia Magnética", Ciudad Autónoma de Buenos Aires, Argentina, Sept. 6-7, **2018**.
58. **"Sensores Cuánticos: Observando efectos de localización con ecos de reversión temporal"**, Contributed Talk at "103a Reunión de la Asociación Física Argentina", Buenos Aires, Sept 17-19, **2018**.
59. **"Mejorando la resolución en imágenes por resonancia magnética para estudiar microestructuras en cerebro y enfermedades neurodegenerativas"**, Invited Speaker at "Conferencia internacional: Actualización en resonancia magnética aplicada a neurociencias", FLENI, Bs As, Argentina, Sept 19, **2018**.
60. **"Mejorando la resolución en imágenes por resonancia magnética para estudiar microestructuras en cerebro y enfermedades neurodegenerativas"**. Invited Professor at "V Curso de Verano: Introducción a la Radioterapia y a la Medicina Nuclear", INTECNUS, CNEA, Bariloche, Argentina, Jan 22, **2019.**
61. **"Quantum technologies in Nuclear Magnetic Resonance for sensing biological, chemical and physical processes at micro- and nano-scale"**. Invited Speaker at the Humboldt Kolleg "Breaking Paradigms: Towards a Multi-, Inter- and Transdisciplinary Science", Ibarra, Ecuador, Feb. 24th, **2019**.
62. **"Quantum technologies in Nuclear Magnetic Resonance for sensing biological, chemical and physical processes at micro- and nano-scale"**. Invited Speaker at the Kick Off Meeting of the European Project PATHOS FET-open "Photonic and nAnomeTric High-sensitivity biO-Sensing" https://pathos-fetopen.weebly.com/, May 24 **2019**.
63. **"Sensing out-of-equilibrium many-body quantum systems by time-reversal echoes"**. Invited Speaker XXI GIAMBIAGI WINTER SCHOOL. Quantum simulations and quantum metrology with cold trapped ions – July 15-24 **2019**.
64. **"Nuclear Magnetic Resonance Spectroscopy and Imaging"**, Invited Lecturer. CELFI-FIMET School ONCO 2019 "updates in Oncology". September **2019**.
65. **"Decoherence scaling transition in the dynamics of quantum information scrambling"**. Invited Speaker. QUANTUM CHAOS 2020 Online SEMINARS. July 30, **2020.** https://youtu.be/6cbOw2Zq-Dg
66. **"Reducción abrupta de la decoherencia del procesamiento de la información cuántica"**, Contributed talk at "105 Reunión Nacional de la Asociación Física Argentina", Primera Webminar, Argentina, Sep. **2020**.
67. **"Mejorando la resolución de imágenes por resonancia magnética para poder estudiar nuestro cerebro"**, Invited Speaker at "Primer Weminar Internacional de Química: Las varias Caras de la Química", Universidad Yachay Tech, Ecuador, Oct 2, **2020**.
68. **"Exploiting fundamental concepts of quantum mechanics to non-invasively quantify deep tissue-microstructure parameters such as cell-sizes or axon diameters"**, Inviter Speakers Analia Zwick and Gonzalo A. Álvarez at BrainHack Micro2Macro virtual conference, hosted online https://brainhack-micro2macro.github.io/ Jan 27, **2021**. https://www.youtube.com/watch?v=mJ5EHys4T9E
69. **"Tecnologías cuánticas en resonancia magnética nuclear para la detección no invasiva de procesos biológicos, químicos y físicos a escalas micrométricas"**, Invited speaker at the Seminars of the Medical Physics Department, Centro Atomico Bariloche, Argentina. April 14, **2021**.
70. **"Decoherence scaling transition in the dynamics of quantum information scrambling"**, Colloquium at the Post-Graduate Program in Physics of the Federal University of São Carlos, Brazil. June 3, **2021**. https://www.youtube.com/watch?v=WlXUC6-2hFk
71. **"¿Qué tan controlable es la dinámica de la información cuántica?"**. Contributed Talk at "106a Reunión de la Asociación Física Argentina", online, Córdoba, Argentina, Oct 14, **2021**.
72. **"Caracterización y control de efectos de decoherencia de sistemas cuánticos fuera de equilibrio".** Invited speaker at the Cuantos 4, Facultad de Ingeniería, Universidad Nacional de Mar del Plata – ICYTE, Mar del Plata, Argentina. April 20, **2022**.
73. **"Nuclear Spins: From Quantum Mechanics to Classical View", MR Physics & Engineering I: Dances with Spins.** Invited speaker at the Joint Annual Meeting of the International Society for Magnetic Resonance in Medicine ISMRM-ESMRMB, ExCeL London, London, England, UK. May 7, **2022**.
74. **"Boosting resolution in magnetic resonance imaging to study microstructures in brain and neurodegenerative diseases".** Seminar at CIMeC Brown Bag, Center for Mind/Brain Science (CIMeC), University of Trento, Italy. Invited by Prof. Dr. Jorge Jovicich (July 1, **2022**).
75. **"Tecnologías Cuánticas con Resonancia Magnética: Monitoreando procesos biológicos, químicos y físicos a escala micrométrica, nanométrica y atómica"**. Invited speaker by the Ministry of Science,

Technology and Innovation of Argentina, as an expert on quantum technologies with magnetioc resonance for defining the "Programa Interinstitucional de Fortalecimiento de las Ciencias y la Tecnologías Cuánticas". Invited by Prof. Dr. Juan P. Paz (July 12, **2022**).

76. **"Towards non-invasive "histology" of deep brain tissue with magnetic resonance".** Seminar at CIMeC Mattarello, Center for Mind/Brain Science (CIMeC), University of Trento, Italy. Invited by Prof. Dr. Jorge Jovicich (July 13, **2022**).
77. **"Caracterización y control de efectos de decoherencia de sistemas cuánticos fuera de equilibrio"**. Contributed Talk at "107a Reunión de la Asociación Física Argentina", Bariloche, Argentina, Sept 27, **2022**.
78. **"Hacia una histología no invasiva de tejido cerebral con resonancia magnética"**. Contributed Talk at "107a Reunión de la Asociación Física Argentina", Bariloche, Argentina, Sept 27, **2022**.
79. "**Hacia una medicina preventiva: El impacto de la física cuántica en el diagnóstico por imágenes"**. Invited Speakers Analia Zwick & Gonzalo A. Álvarez at the Asociacion de Amigos del instituto Weizmann, INSUD, Buenos Aires, Argentina, Oct. 26, **2022**
80. **"Towards non-invasive "histology" of deep brain tissue with magnetic resonance"**. Invited speaker at the Humboldt Kolleg "Expanding the Frontiers of Science: A Transdisciplinary Approach", Montevideo, Uruguay, Oct 27, **2022**.
81. **"Hacia una histología no invasiva de tejido cerebral con resonancia magnética nuclear"**. Invited Professor at the Escuela Jose Antonio Balseiro "Magnetismo y Materiales Magnéticos", Bariloche, Argentina, Oct 31, **2022**.
82. **"Hacia una histología no invasiva de tejido cerebral con resonancia magnética nuclear"**. Invited Professor at "VII Curso de Verano: Introducción a la Radioterapia y Medicina Nuclear", INTECNUS, CNEA, Bariloche, Argentina, Jan 13, **2023.**

Scientific Visits and Research Stays

- **Stage at Laboratoire de RMN de la Matière Condesée, Institut Le Bel de l´Université Louis Pasteur**, Strasbourg, France (Financial support from ECOS-SUD), (September-November **2003**). Host : Jésus Raya and Prof. Dr. Jérôme Hirschinger.
- **Stage at Chemical Physics Department, Weizmann Institute of Science**, Rehovot, Israel (Financial support from Fundación Antorchas-Weizmann Institute), (November-December **2005**. Host: Prof. Dr. Lucio Frydman.
- **Short visit at Fachbereich Physik, Universität Dortmund**, Dortmund, Germany, August **2007**. Host: Prof. Dr. Dieter Suter.
- **Visit at the department of Macromolecular Chemistry, RWTH Aachen, Sammelbau Chemie**, Aachen, Germany, September **2007**. Host: Prof. Dr. Bernhard Blümich and Dr. Federico Casanova. Collaboration with Dr. Ernesto P. Danieli.
- **Stage at Chemical Physics Department, Weizmann Institute of Science**, Rehovot, Israel (Financial support from Fundacion Antorchas-Weizmann Institute), Host: Prof. Dr. Lucio Frydman, February-March **2008**.
- **Short visit at ICFO - Institut de Ciències Fotòniques**, Barcelona, Spain, March **2008**. Host: Prof. Dr. Maciej Lewenstein.
- **Stage at Chemical Physics Department, Weizmann Institute of Science**, Rehovot, Israel (Financial support from Fundacion Antorchas-Weizmann Institute), Host: Prof. Dr. Lucio Frydman, September-October **2008**.
- **Stage at Chemical Physics Department, Weizmann Institute of Science**, Rehovot, Israel, Host: Prof. Dr. Lucio Frydman and Prof. Dr. Gershon Kurizki, December **2008**.
- **Stage at Chemical Physics Department, Weizmann Institute of Science**, Rehovot, Israel, Host: Prof. Dr. Lucio Frydman and Prof. Dr. Gershon Kurizki, August **2009**.
- **Stage at Chemical Physics Department, Weizmann Institute of Science**, Rehovot, Israel, Host: Prof. Dr. Lucio Frydman and Prof. Dr. Gershon Kurizki, Feb-Mar **2011**.
- **Visit to the National University of Cordoba**, Cordoba, Argentina, November **2011.** Host: Prof. Dr. Horacio M. Pastawski.
- **Visit to the University of Southern California**, Los Angeles, USA, December **2011**. Host: Prof. Dr. Daniel Lidar.
- **Visit to the Institut non linéaire de Nice (INLN), Université Nice Sophia Antipolis**, Valbonne, France, April **2013**. Host: Prof. Dr. Robin Kaiser.
- **Visit to the Institut non linéaire de Nice (INLN), Université Nice Sophia Antipolis**, Valbonne, France, April **2014**. Host: Prof. Dr. Robin Kaiser.
- **Short visit at Fachbereich Physik, Technische Universität Dortmund**, Dortmund, Germany, October **2014**. Host: Prof. Dr. Dieter Suter.
- **Visit to the Institut non linéaire de Nice (INLN), Université Nice Sophia Antipolis**, Valbonne, France, April **2015**. Host: Prof. Dr. Robin Kaiser.
- **Short visit at Fachbereich Physik, Universität Dortmund**, Dortmund, Germany, November **2015**. Host: Prof. Dr. Dieter Suter.
- **Short visit at Institut für komplexe Quantensysteme - Universität Ulm**, Ulm, Germany, December **2015**. Host: Prof. T. Calarco and Prof. S. Montangero.
- **Short visits at the Mahidol University**, Bangkok, Thailand, March & April **2016**. Host: Prof. Dr. Sujin Suwanna and Prof. Dr. Kittiwit Matan.
- **Visit at Fachbereich Physik, Technische Universität Dortmund**, Dortmund, Germany, May **2016**. Host: Prof. Dr. Dieter Suter.
- **Visit to the National University of Cordoba**, Cordoba, Argentina, June **2016**. Host: Prof. Dr. Horacio M. Pastawski.
- **Visit at Fachbereich Physik, Technische Universität Dortmund**, Dortmund, Germany, November **2016**. Host: Prof. Dr. Dieter Suter.
- **Short visit at the Center for Mind/Brain Sciences, University of Trento,** Mattarello, Italy, May **2019**. Host: Prof. Dr. Jorge Jovicich.

- **Visiting professor at the Center for Mind/Brain Sciences, University of Trento,** Mattarello, Italy, May-July **2022**. Host: Prof. Dr. Jorge Jovicich.

Works presented in Congresses

1. **"NQR in Bencyl Chloride"** (RCN en el Cloruro de Bencilo), G. A. Álvarez, L. M. Cerioni, A. H. Brunetti. 85ª Reunión Nacional de la Asociación de Física Argentina, Buenos Aires, Argentina, September **2000**.
2. **"Quantum dynamics in a spin´s ladder"** (Dinámica cuántica en una escalera de espines), E. P. Danieli, G. A. Alvarez, H. M. Pastawski, P. R. Levstein. 86ª Reunión Nacional de la Asociación Física Argentina, Rosario, Argentina, September **2001**.
3. **"Spin dynamics during ^{1}H-^{13}C Cross-Polarization in the Liquid Cristal 8CB"** (Dinámica de Espines durante la Polarización Cruzada ^{1}H-^{13}C en el Cristal Líquido 8CB), G. A. Alvarez, K. Chattah, P. R. Levstein. 87ª Reunión Nacional de la Asociación Física Argentina, Huerta Grande, Argentina, September **2002**.
4. **"Decoherence during ^{1}H-^{13}C Cross Polarization"**, G. A. Alvarez, E. P. Danieli, P. R. Levstein, H. M. Pastawski. Pan American Advanced Studied Institute (PASI) on Physics at the Nanometer Scale – PASI 2003, San Carlos de Bariloche, Argentina, June **2003**.
5. **"Source boundary conditions in the Keldish formalism"**, E. P. Danieli, L. E. F. Foa Torres, G. A. Alvarez, H. M. Pastawski. Pan American Advanced Studied Institute (PASI) on Physics at the Nanometer Scale – PASI 2003, San Carlos de Bariloche, Argentina, June **2003**.
6. **"Spin dynamics in Keldysh formalism"**, E. P. Danieli, G. A. Alvarez, H. M. Pastawski, P. R. Levstein. Third Stig Lundqvist Conference on Advancing Frontiers of Condensed Matter Physics: "Fundamental Interactions and Excitations in Confined Systems", Miramare, Trieste, Italy, August **2003**.
7. **"Decoherence during ^{1}H-^{13}C Cross Polarization"**, G. A. Álvarez, E. P. Danieli, P. R. Levstein and H. M. Pastawski. Pan American Advanced Studied Institute (PASI) and Workshop on Physics of Information – PASI 2003, Búzios, Brazil, December **2003**.
8. **"Quantum dynamics with source boundary condition"**, E. P. Danieli, G. A. Álvarez, L. E. F. Foa Torres and H. M. Pastawski. Pan American Advanced Studied Institute (PASI) and Workshop on Physics of Information – PASI 2003. Búzios, Brazil, December **2003**.
9. **"Thermalization and decoherence through stroboscopic measurements and injections. Application to a spin system"**, G. A. Álvarez, E. P. Danieli, P. R. Levstein and H. M. Pastawski. 2º Taller Regional de Física Estadística y sus Aplicaciones a la Física de la Materia Condensada (TREFEMAC'04), 27-28 May **2004**-Córdoba, Argentina.
10. **"Quantum dynamics under coherent and incoherent effects of a spin bath"**, E. P. Danieli, G. A. Álvarez, L. E. F. Foa Torres and H. M. Pastawski. 2º Taller Regional de Física Estadística y sus Aplicaciones a la Física de la Materia Condensada (TREFEMAC'04), 27-28 May **2004**-Córdoba, Argentina.
11. **"Decoherence as the attenuation of the mesoscopic echo"** (Decoherencia como atenuación del eco mesoscópico), E. P. Danieli, G. A. Álvarez, P. R. Levstein and H. M. Pastawski. 89ª Reunión Nacional de la Asociación Física Argentina, September **2004**-Bahía Blanca, Buenos Aires.
12. **"Loschmidt Echo vs. Polarization Echo in spin interacting systems"** (Eco de Loschmidt vs. Eco de Polarización en sistemas de espines interactuantes), G. A. Álvarez, E. P. Danieli, P. R. Levstein and H. M. Pastawski. 89ª Reunión Nacional de la Asociación Física Argentina, September **2004**-Bahía Blanca, Buenos Aires.
13. **"Intrinsic quantum irreversibility in a many body system obserbed by NMR"** (Irreversibilidad cuántica intrínseca en un sistema de muchos cuerpos observada por RMN", G. A. Álvarez, P. R. Levstein, H. M. Pastawski, J. Raya y J. Hirschinger. 89ª Reunión Nacional de la Asociación Física Argentina, September **2004**-Bahía Blanca, Buenos Aires.
14. **"Environmentally induced Quantum Dynamical Phase Transition in the swapping operation"** (Transición de Fase Dinámica Cuántica inducida por el ambiente en un sistema de dos qubits interactuantes), G. A. Álvarez, E. P. Danieli, P. R. Levstein y H. M. Pastawski. 90ª Reunión Nacional de la Asociación Física Argentina, September **2005**-La Plata, Buenos Aires.
15. **"Ensemble dynamics as the evolution of a pure entangled state"** (Dinámica de un ensamble como evolución de un estado puro entrelazado", E. P. Danieli, G. A. Álvarez, P. R. Levstein y H. M. Pastawski. 90ª Reunión Nacional de la Asociación Física Argentina, September **2005**-La Plata, Buenos Aires.
16. **"Environmentally induced Quantum Dynamical Phase Transition in the swapping operation"**, G. A. Álvarez, E. P. Danieli, P. R. Levstein y H. M. Pastawski. Workshop on Noise and Instabilities in Quantum Mechanics, 3 - 7 October **2005**, Abdus Salam ICTP – Trieste, Italy.
17. **"Environmentally induced Quantum Dynamical Phase Transition in the swapping operation"**, G. A. Álvarez, E. P. Danieli, P. R. Levstein y H. M. Pastawski. Quantum symposium. Time of Challenges: Harnessing the Uncertainties of the Quantum World (with the presence of Ahmed Zewail, Novel Price in Chemistry,1999), October **2005**, Córdoba, Argentina.
18. **"Ensemble dynamics as the evolution of a pure entangled state"** (Dinámica de un ensamble como evolución de un estado puro entrelazado", E. P. Danieli, G. A. Álvarez, P. R. Levstein y H. M. Pastawski. Quantum symposium. Time of Challenges: Harnessing the Uncertainties of the Quantum World (with the presence of Ahmed Zewail, Novel Price in Chemistry,1999), October **2005**, Córdoba, Argentina.
19. **"Environmentally induced Quantum Dynamical Phase Transition in the spin swapping operation"**, G. A. Álvarez, E. P. Danieli, P. R. Levstein y H. M. Pastawski. The 1005 Minerva-Gentner Symposium - A Dive into Magnetic Resonance, December **2005**, Eilat, Israel.
20. **"Entanglement as a tool for ensemble spin dynamics: Application to mesoscopic echoes"** , E. P. Danieli, G. A. Álvarez, P. R. Levstein y H. M. Pastawski. The 1005 Minerva-Gentner Symposium - A Dive into Magnetic Resonance, December **2005**, Eilat, Israel.
21. **"Polarization transfer through a selected pathway in a many interacting spins"**, G. A. Álvarez, E. P. Danieli, P. R. Levstein, H. M. Pastawski and L. Frydman. 91º Reunión Nacional de la Asociación Física Argentina, September **2006**, Merlo, San Luis, Argentina.
22. **"Signatures of a quantum dynamical phase transition in a three-spin system in presence of a spin environment"**, G. A. Álvarez, P. R. Levstein, H. M. Pastawski. At the Frontiers of Condensed Matter III – New trends in structural, electronic and magnetic properties of matter, December 11-15, **2006** - Buenos Aires, Argentina.

23. **"Directional polarization transfer in a branched spin network by selective pruning: an NMR porposal"**, G. A. Álvarez, E. P. Danieli, P. R. Levstein, H. M. Pastawski and L. Frydman. Ninth J. J. Giambiagi Winter School – Physics and the computers of the future, August **2007**, Buenos Aires, Argentina. **"Directional polarization transfer in a branched spin network by selective pruning: an NMR porposal"**, G. A. Álvarez, E. P. Danieli, P. R. Levstein, H. M. Pastawski and L. Frydman. Ninth J. J. Giambiagi Winter School – Physics and the computers of the future, August **2007**, Buenos Aires, Argentina.
24. **"Directional polarization transfer in a branched spin network by selective pruning: an NMR porposal"**, G. A. Álvarez, E. P. Danieli, P. R. Levstein, H. M. Pastawski and L. Frydman. Summer school on novel quantum phases and non-equilibrium phenomena in cold atomic gases, September **2007**, Abdus Salam ICTP – Trieste, Italy.
25. **"Directional polarization transfer in a branched spin network by selective pruning: an NMR porposal"**, G. A. Álvarez, E. P. Danieli, P. R. Levstein, H. M. Pastawski and L. Frydman. Sólidos 2007, November **2007**, Huerta Grande, Córdoba, Argentina.
26. **"Characterization of the decoherence rate of large quantum registers based on variable system-environment interactions"**. G. A. Álvarez and D. Suter. Network Meeting of the Alexander von Humboldt Foundation, Bonn, Germany (April **2009**).
27. **"Localization effects induced by decoherence".** G. A. Álvarez and D. Suter. International Workshop on Dynamical Decoupling (IWODD) at National Institute of Standars and Technology (NIST), Boulder, Colorado, USA. (October **2009**).
28. **"Tailored thermodynamics and directional perfect state transfers: playing with time interferences"**. G.A. Álvarez, D.B. Rao Dasari, M. Mishkovsky, P.R. Levstein, H.M. Pastawski, D. Suter, G. Kurizki and L. Frydman. International Workshop on Dynamical Decoupling (IWODD) at National Institute of Standars and Technology (NIST), Boulder, Colorado, USA. (October **2009**).
29. **"Tailored thermodynamics and directional perfect state transfers: playing with time interferences"**. G.A. Álvarez, D.B. Rao Dasari, M. Mishkovsky, P.R. Levstein, H.M. Pastawski, D. Suter, G. Kurizki and L. Frydman. Quantum Simulators at Wilhelm und Else Heraeus Physikzentrum Bad Honnef, Germany (October **2009**).
30. **"NMR Quantum Simulation of Localization Effects Induced by Decoherence"**. G. A. Álvarez and D. Suter. School and conference on spin-based quantum information processing, Konstanz, Germany (August **2010**).
31. "**Fault tolerant dynamical decoupling for quantum computing and memory".** Alexandre M. Souza, Gonzalo A. Álvarez and Dieter Suter. Colloquium CNRS GDR 3322, University of Nice, Sophia Antipolis (UNS), France (March **2011**).
32. "**Incoherent Liquid-state TOCSY: An Interference-less Spin Dynamics by Induced Dephasing".** Christian O. Bretschneider, Gonzalo A. Álvarez and Lucio Frydman. 52nd ENC (Experimental NMR Conference), Pacific Grove, California, USA (April **2011**).
33. **"Localization Effects Induced by Decoherence in Superpositions of Many-spin Quantum State"**. G. A. Álvarez and D. Suter. Euromar 2011, Frankfurt, Germany (August **2011**).
34. **"Robustness of spin-coupling distributions for perfect quantum state transfer"**, Analia E. Zwick, Gonzalo A. Álvarez, Joachim Stolze and Omar Osenda. Quantum information processing and communication international conference at ETH Zurich, Switzerland (September **2011**).
35. **"Localization Effects Induced by Decoherence in Superpositions of Many-spin Quantum State"**. G.A. Álvarez and D. Suter. Quantum information processing and communication international conference at ETH Zurich, Switzerland (September **2011**).
36. **"Chemical Shift Modulations from Fully Refocused Spin-Echo Sequences: the Selective Dynamical Recoupling Experiment"**, Pieter Ernst Scholtz Smith, Guy Bensky, Gonzalo A. Alvarez, Gershon Kurizki, and Lucio Frydman. 53rd ENC, Miami, Florida, USA (April 15 - 20, **2012**).
37. **"Transferencia robusta de estados en cadenas de espines",** Analia Zwick, Gonzalo A. Álvarez, Joachim Stolze and Omar Osenda. Talk at the "Asociación de Física Argentina", Villa Carloz Paz, Córdoba, Argentina (September **2012**).
38. **"Robust Room-Temperature** 13**C Hyperpolarization in Diamonds via Combined Laser and Microwave Irradiation"**, C.O. Bretschneider, G.A. Álvarez, R. Fischer, D. Gershoni, L. Frydman. 2014 COST meeting on Fundamental Problems in Quantum Physics, Weizmann Institute, Israel (March **2014**).
39. **"Optimized dynamical control of state transfer through noisy spin chains"**, A. Zwick, G.A. Álvarez, G. Bensky and G. Kurizki. 2014 COST meeting on Fundamental Problems in Quantum Physics, Weizmann Institute, Israel (March **2014**).
40. **"Experimental evidence of an Anderson-like transition of many-body localization by competing dipolar interactions"**, G.A. Álvarez, D. Suter, and R. Kaiser. 2014 COST meeting on Fundamental Problems in Quantum Physics, Weizmann Institute, Israel (March **2014**).
41. **"Non-uniform Oscillating-Gradient Spin-Echo MRI: A novel ultrasensitive micro-architectural probe",** N. Shemesh, G.A. Álvarez, and L. Frydman. 55th Experimental Nuclear Magnetic Resonance Conference (ENC), Boston, USA (March **2014**).
42. **"Robust Room-Temperature** 13**C Hyperpolarization in Diamonds via Combined Laser and Microwave Irradiation"**, C.O. Bretschneider, G.A. Álvarez, R. Fischer, D. Gershoni, L. Frydman. 55th Experimental Nuclear Magnetic Resonance Conference (ENC), Boston, USA (March **2014**).
43. **"Probing Internal-Gradient-Distribution-Tensors (IGDT) by Non-Uniform Oscillating-Gradient Spin-Echo (NOGSE) MRI: A New Approach to Map Orientations in Biological Tissues"**, N. Shemesh, G.A. Alvarez, and L. Frydman. Joint Annual Meeting ISMRM-ESMRMB 2014, Milan, Italy (10-16 May **2014**). **Suma cum laude merit award** - top 5% of abstracts.
44. **"Cellular Size Distributions Revealed by Non-Uniform Oscillating-Gradient Spin-Echo (NOGSE) MRI"**, N. Shemesh, G.A. Alvarez, and L. Frydman. Joint Annual Meeting ISMRM-ESMRMB 2014, Milan, Italy (10-16 May **2014**). **Suma cum laude merit award** - top 15% of abstracts.
45. **"Room-Temperature 13C Hyperpolarization in NV-doped Diamonds: A Combined Laser and Microwave Irradiation Technique at Arbitrary Fields"**, C.O. Bretschneider, G.A. Álvarez, R. Fischer, P. London, and L. Frydman. Seminar at COST (Spin Hyperpolarisation in NMR and MRI) satellite in EUROMAR 2014, Zurich, Switzerland (June **2014**).

46. **"Coherent Dynamical Recoupling of Diffusion-Driven Decoherence in Magnetic Resonance"**, G.A. Álvarez, N. Shemesh, and L. Frydman. EUROMAR 2014, Zurich, Switzerland (July **2014**).
47. **"Non-uniform Oscillating-Gradient Spin-Echo MRI: A novel ultrasensitive micro-architectural probe",** N. Shemesh, G.A. Álvarez, and L. Frydman. Israel Magnetic Resonance Annual Meeting, Haifa, Israel (June **2014**).
48. **"Room-Temperature 13C Hyperpolarization in NV-doped Diamonds: A Combined Laser and Microwave Irradiation Technique at Arbitrary Fields"**, C.O. Bretschneider, G.A. Álvarez, R. Fischer, P. London, and L. Frydman. Seminar at Israel Magnetic Resonance Annual Meeting, Haifa, Israel (June **2014**).
49. **"Quantum decoherence control as a tool for characterizing unknown systems"**, G.A. Alvarez, N. Shemesh, P.E. S. Smith, G. Bensky, G. Kurizki, and L. Frydman. International Workshop "Echoes in Complex Systems", Max Planck Institute for the Physics of Complex Systems, Dresden, Germany (September **2014**).
50. **"Maximized information on the environment by dynamically controlled spin probes"**, A. Zwick, G.A. Álvarez, and G. Kurizki. International Workshop "Echoes in Complex Systems", Max Planck Institute for the Physics of Complex Systems, Dresden, Germany (September **2014**).
51. **"Local and bulk ^{13}C hyperpolarization in NV-centered diamonds at variable fields"**, R. Fischer, G.A. Álvarez, C.O. Bretschneider, P. London, H. Kanda, S. Onoda, J. Isoya, D. Gershoni, and L. Frydman. The Israel Physical Society (IPS) conference 2014, Ben Gurion University, Beer-Sheva, Israel (December 21, **2014**).
52. **"Cellular microstructures revealed by Non-Uniform Oscillating-Gradient Spin-Echo (NOGSE) MRI"**, N. Shemesh, G.A. Alvarez, L. Frydman. "Deluxe" poster - short oral + poster. International Biomedical and Astronomical Signal Processing frontiers workshop (BASP), Villars-sur-Ollon, Switzerland (January **2015**).
53. **"Quantum decoherence control as a tool for characterizing unknown systems"**, G.A. Álvarez, N. Shemesh, P.E.S. Smith, G. Bensky, G. Kurizki, D. Suter and L. Frydman. WE-Heraeus-Seminar on 'Quantum Correlations beyond Entanglement'**,** Bad Honnef, Germany (April 13-15, **2015**).
54. **"Experimental observation of a phase transition of the evolution of a many-body quantum system with dipolar interactions"**, G.A. Álvarez, D. Suter, and R. Kaiser, WE-Heraeus-Seminar on 'Quantum Correlations beyond Entanglement'**,** Bad Honnef, Germany (April 13-15, **2015**).
55. **"Maximizing information on the environment by dynamically controlled qubit probes"**, A. Zwick, G.A. Álvarez and G. Kurizki. WE-Heraeus-Seminar on 'Quantum Correlations beyond Entanglement'**,** Bad Honnef, Germany (April 13-15, **2015**).
56. **"Local and Bulk ^{13}C Hyperpolarization in NV-Centered Diamonds at Variable Fields and Orientations"**, G.A. Álvarez, C.O. Bretschneider, R. Fischer, P. London, H. Kanda, S. Onoda, J. Isoya, D. Gershoni, and L. Frydman. 56th Experimental Nuclear Magnetic Resonance Conference (ENC), Asilomar Conference Center, Pacific Grove, California, USA (April 19-24, **2015**).
57. **"Experimental observation of a phase transition of the evolution of a many-body quantum system with dipolar interactions"**, G.A. Álvarez, D. Suter, and R. Kaiser. 56th Experimental Nuclear Magnetic Resonance Conference (ENC), Asilomar Conference Center, Pacific Grove, California, USA (April 19-24, **2015**).
58. **"Selective Dynamical Recoupling of Diffusion-Driven Decoherence: Magnetic Resonance Imaging Applications"**, G.A. Álvarez, N. Shemesh, and L. Frydman. 56th Experimental Nuclear Magnetic Resonance Conference (ENC), Asilomar Conference Center, Pacific Grove, California, USA (April 19-24, **2015**).
59. **"Can 13C in Diamond Powders be Polarized in Single-Digit Gauss Fields?"**, C.O. Bretschneider, G.A. Alvarez, R. Fischer, P. London, D. Gershoni , L. Frydman. 56th Experimental Nuclear Magnetic Resonance Conference (ENC), Asilomar Conference Center, Pacific Grove, California, USA (April 19-24, **2015**).
60. **"Robust Level Anti-Crossing Induced 13C Hyper-polarization in 10% Enriched Diamond Crystals"**, C.O. Bretschneider, G.A. Alvarez, R. Fischer, P. London, D. Gershoni, L. Frydman. 56th Experimental Nuclear Magnetic Resonance Conference (ENC), Asilomar Conference Center, Pacific Grove, California, USA (April 19-24, **2015**).
61. **"Optimizing quantum sensors by estimation theory and dynamical control tools",** A. Zwick, G.A. Alvarez, G. Kurizki Frontiers In Physical Sciences (Nov **2016**, Buenos Aires, Argentina).
62. "**Criticality of environmental information obtainable by dynamically controlled quantum probes",** A. Zwick, G.A. Alvarez, G. Kurizki. Workshop on Driven Quantum Systems (Nov **2016**, Bariloche, Argentina).
63. **"Optimizando sensores cuánticos con teoría de la estimación y control dinámico cuántico"**, A. Zwick, G.A. Álvarez, G. Kurizki. Contributed talk in 102a Reunión de la Asociación Física Argentina (Sep 26-29, **2017**, La Plata, Buenos Aires, Argentina).
64. **"Optimizando sensores cuánticos con teoría de la estimación y control dinámico cuántico"**, A. Zwick, G.A. Álvarez, G. Kurizki. Poster in 102a Reunión de la Asociación Física Argentina (Sep 26-29, **2017**, La Plata, Buenos Aires, Argentina).
65. **"Mejorando la resolución de imágenes por resonancia magnética nuclear para estudiar microestructuras en tejidos y órganos"**, G.A. Álvarez, A. Zwick, N. Shemesh, L. Frydman. 102a Reunión de la Asociación Física Argentina (Sep 26-29, **2017**, La Plata, Buenos Aires, Argentina).
66. **"Boosting resolution in magnetic resonance imaging to study microstructures in brain and neurodegenerative diseases"**, G.A. Álvarez. AVH-Kolleg: Current advances on neurodegeneration: from molecular biology to translational medicine (Sep 28-Oct 1, **2017**, Villa Carlos Paz, Cordoba, Argentina).
67. **"Quantum Simulations: Localization-delocalization transition in the dynamics of many-body systems"**, G.A. Álvarez, A. Dallalba, F. Lozano, A. Zwick. XXIII Latin American Symposium on Solid State Physics (April 10-13, **2018**, Bariloche, Argentina).
68. **"Criticality of environmental information obtainable by dynamically controlled quantum probes",** A. Zwick, G.A. Alvarez, G. Kurizki. XXIII Latin American Symposium on Solid State Physics (April 10-13, **2018**, Bariloche, Argentina).
69. **"Optimización de la secuencia reacople dinámico selectivo para obtener parámetros microestructurales de tejidos utilizando difusión en RMN"**, M. Capiglioni, A. Zwick, G.A. Álvarez. XX Escuela de Invierno Giambiagi: Física en el Mundo de la Salud: un Encuentro Transdisciplinario (Jul 30-Aug 03, **2018**, Buenos Aires, Argentina).

70. **"Linking localization effects on the dynamic behavior of many-spin systems with quantum irreversibility"**, F.S. Lozano Negro, A. Dall'Alba, A. Zwick, and G.A. Álvarez. Summer School on Collective Behaviour in Quantum Matter (Aug 27-Sept 14, **2018**, Trieste, Italy).
71. **"Linking localization effects on the dynamic behavior of many-spin systems with quantum irreversibility",** F.S. Lozano Negro, A. Dall'Alba, A. Zwick, and G.A. Álvarez. "IV Taller de Resonancia Magnética", (Sept. 6-7, **2018,** Ciudad Autónoma de Buenos Aires, Argentina).
72. **"Selective microstructural images by modulated gradients in diffusion weighted imaging",** A. Zwick, M. Capiglioni, and G.A. Álvarez. "IV Taller de Resonancia Magnética" (Sept. 6-7, **2018**, Ciudad Autónoma de Buenos Aires, Argentina).
73. **"Attaining precision limits for estimating restriction lengths in diffusion Magnetic Resonance Imaging"**. A. Zwick A, G.A. Álvarez. Contributed talk at "103a Reunión de la Asociación Física Argentina" (Sept 17-19, **2018**, Buenos Aires, Argentina).
74. **"Secuencia de reacople dinámico selectivo utilizada como filtro selectivo de tamaños microestructurales en MRI"**, M. Capiglioni, A. Zwick A, G.A. Álvarez. Contributed talk and poster at "103a Reunión de la Asociación Física Argentina" (Sept 17-19, **2018**, Buenos Aires, Argentina). **Especial mention for the Masperi Award 2018**, to the best poster based on the Bachelor Thesis.
75. **"Relacionando efectos de localización en el comportamiento dinámico de muchos espines con irreversibilidad cuántica"**. F.S. Lozano Negro, A. Dall'Alba, A. Zwick, and G.A. Álvarez. Contributed talk and poster at "103a Reunión de la Asociación Física Argentina" (Sept 17-19, **2018**, Buenos Aires, Argentina).
76. **"Quantum Technologies in Nuclear Magnetic Resonance for Sensing Biological, Chemical and Physical Processes at Micro- and Nano-Scale"**, G.A. Álvarez. Humboldt Colloquium "Shaping the Future of German-Argentinian Scientific Cooperation – The Role of Curiosity-Driven Research" (Oct 25-27, **2018**, Buenos Aires, Argentina).
77. **"Quantum sensing to push the resolution limits in Magnetic Resonance Imaging"**, Analia Zwick, Dieter Suter, Gershon Kurizki, Gonzalo. A. Álvarez. Invited Speaker at "Quantum 2019: From Foundations of Quantum Mechanics to Quantum Information and Quantum Metrology & Sensing" (May 26-June 1, **2019**, Torino, Italy).
78. **"Attaining the ultimate precision bound for estimating parameters on the environment by a quantum sensor"**, Analia Zwick, Dieter Suter, Gershon Kurizki, Gonzalo. A. Álvarez. Quantum 2019: "From Foundations of Quantum Mechanics to Quantum Information and Quantum Metrology & Sensing" (May 26-June 1, **2019**, Torino, Italy).
79. "**Dynamical Decoupling Noise Spectroscopy of Quantum Coherences of Many-Body Systems**". Martin Kuffer, Gonzalo A. Alvarez. Contributed Talk. XXI GIAMBIAGI WINTER SCHOOL. Quantum simulations and quantum metrology with cold trapped ions – July 15-24 (**2019**).
80. "**Sensitivity of quantum information processing to perturbations in many-body systems**". Federico Dominguez, Cristina Rodriguez, Gonzalo A. Alvarez. XXI GIAMBIAGI WINTER SCHOOL. Quantum simulations and quantum metrology with cold trapped ions – July 15-24 (**2019**).
81. "**Qubit noise spectroscopy of disordered Gaussian processes**". Leonardo Pedraza, Gonzalo A. Alvarez. XXI GIAMBIAGI WINTER SCHOOL. Quantum simulations and quantum metrology with cold trapped ions – July 15-24 (**2019**).
82. "**Simulations and experimental observation of critical effects in the estimation precision of an environmental parameter using a quantum sensor under dynamical control**". Cristina Rodriguez, Analia Zwick, Gonzalo A. Alvarez. XXI GIAMBIAGI WINTER SCHOOL. Quantum simulations and quantum metrology with cold trapped ions – July 15-24 (**2019**).
83. "**Experimental study of the relation between many-body thermalization and localization by measuring out-of-time-ordered commutators**". Cristina Rodriguez, Federico Dominguez, Analia Zwick, Gonzalo A. Alvarez. XXI GIAMBIAGI WINTER SCHOOL. Quantum simulations and quantum metrology with cold trapped ions – July 15-24 (**2019**).
84. **"Linking localization effects on the dynamic behavior of many-spin systems with quantum irreversibility"**, F.S. Lozano Negro, A. Dall'Alba, A. Zwick, and G.A. Álvarez. . XXI GIAMBIAGI WINTER SCHOOL. Quantum simulations and quantum metrology with cold trapped ions – July 15-24 (**2019**).
85. "**Determinación de distribución de orientaciones y diámetros de microfibras como nuevo paradigma de imágenes cuantitativas cerebrales**", M.L. Giménez, M. Capiglioni, A. Zwick, G. A. Álvarez. Contributed talk 104a Reunión de la Asociación Física Argentina, Santa Fe, Argentina Septiembre **2019**.
86. **"Monitoreo en tiempo real del proceso de ósmosis a través de membranas con un equipo portátil de imágenes por resonancia magnética a campo terrestre"**, Micaela Kortsarz, Pablo Jimenez, Gonzalo A. Álvarez. 104a Reunión de la Asociación Física Argentina, Santa Fe, Argentina Septiembre **2019**.
87. **"Experimental study of the relation between many-body thermalization and localization by directly measuring out-of-time-ordered commutators"**. Cristina Rodriguez, Federico Dominguez, Analia Zwick, Gonzalo A. Alvarez. Okinawa School in Physics: Coherent Quantum Dynamics, 24 September - 3 October (**2019**) Okinawa, Japan.
88. **"Experimental study of the relation between many-body thermalization and localization by directly measuring out-of-time-ordered commutators"**. Cristina Rodriguez, Federico Dominguez, Analia Zwick, Gonzalo A. Alvarez. WORKSHOP ON QUANTUM FOUNDATIONS AND QUANTUM INFORMATION (celebrating Juan Pablo Paz's 60th birthday) – Puerto Madryn – October 29th to November 1st **2019.**
89. **"Sensitivity of quantum information processing to perturbations in many-body systems"**. Federico Dominguez, Cristina Rodriguez, Gonzalo A. Alvarez. WORKSHOP ON QUANTUM FOUNDATIONS AND QUANTUM INFORMATION (celebrating Juan Pablo Paz's 60th birthday) – Puerto Madryn – October 29th to November 1st **2019.**
90. **"Optimizing quantum sensors to their ultimate precision limits"**. A. Zwick, G.A.Álvarez. WORKSHOP ON QUANTUM FOUNDATIONS AND QUANTUM INFORMATION (celebrating Juan Pablo Paz's 60th birthday) – Puerto Madryn – October 29th to November 1st **2019.**
91. **"Reducción abrupta de la decoherencia del procesamiento de la información cuántica".** Federico Dominguez, Cristina Rodriguez, Robin Kaiser, Dieter Surer, Gonzalo A. Alvarez**.** Contributed talk at Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2020**).

92. **"Maximizando la información obtenible con sensores cuánticos con el Efecto Zenón"**. B. Ronchi, A. Zwick, G. A. Álvarez. Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2020**).
93. **"Imágenes cuantitativas no-invasivas con Resonancia Magnética Nuclear pesadas por difusión basadas en parámetros microestructurales".** P. Jiménez, M. Capiglioni, A. Zwick, G. A. Álvarez. Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2020**).
94. **"Identificando biomarcadores basados en proteínas fluorescentes con imágenes no-invasivas por resonancia magnética".** M. V. Kortsarz, G. A. Álvarez, C. R. Smulski. Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2020**).
95. **"Límites en el tamaño de sistemas cuánticos para el control confiable".** M. C. Rodríguez, F. D. Domínguez, A. Zwick, G. A. Álvarez. Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2020**).
96. **"Integrales de camino para entender espectros del ruido medidos por un sensor cuántico".** M. Kuffer, A. Zwick, G. A. Álvarez. Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2020**).
97. **"Imágenes no invasivas de microestructuras de tejidos biológicos por resonancia magnética nuclear".** A. Zwick, M. Capiglioni, P. Jiménez, D. Suter, G. Kurizki, G. A. Álvarez. Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2020**).
98. **"Imágenes no invasivas de microestructuras de tejidos biológicos por resonancia magnética nuclear"**. Analía Zwick, Milena Capiglioni, Pablo Jiménez, Gonzalo A. Álvarez. Invited speaker at 105a Reunión de la Asociación Física Argentina, Primera Webinar (Sept 21-25, **2020**).
99. **"Integrales de camino para entender espectros del ruido medidos por un sensor cuántico"**. Martin Kuffer, Analía Zwick, Gonzalo A. Álvarez. Contributed talk at 105a Reunión de la Asociación Física Argentina, Primera Webinar (Sept 21-25, **2020**).
100. **"Optimizing quantum sensors to their ultimate precision limits"**. Analía Zwick, Victor Mukherjee, Dieter Suter, Gershon Kurizki, Gonzalo A. Álvarez. Contributed talk at 105a Reunión de la Asociación Física Argentina, Primera Webinar (Sept 21-25, **2020**).
101. **"Simulaciones cuánticas: Evaluando sistemas cuánticos de muchos cuerpos como sensores utilizando espectroscopia de ruido por desacoplamiento dinámico"**. Agustín Silva, Gonzalo A. Álvarez. Contributed talk at 105a Reunión de la Asociación Física Argentina, Primera Webinar (Sept 21-25, **2020**).
102. **"Maximizando la información obtenible con sensores cuánticos con el Efecto Zenón"**. Bruno M. Ronchi, Analía Zwick, Gonzalo A. Álvarez. Contributed talk at 105a Reunión de la Asociación Física Argentina, Primera Webinar (Sept 21-25, **2020**).
103. **"Evaluación de métodos para la cuantificación no invasiva de microestructuras cerebrales con imágenes por resonancia magnética"**. Melisa Lucía Giménez, Pablo Jiménez, Leonardo A. Pedraza Pérez, Diana Betancourt, Analía Zwick, Gonzalo Agustín Álvarez. Contributed talk at 105a Reunión de la Asociación Física Argentina, Primera Webinar (Sept 21-25, **2020**).
104. **"Imágenes cuantitativas no-invasivas con Resonancia Magnética Nuclear pesadas por difusión basadas en parámetros microestructurales"**. Pablo Jiménez, Milena Capiglioni, Analía Zwick, Gonzalo A. Álvarez. Contributed talk at 105a Reunión de la Asociación Física Argentina, Primera Webinar (Sept 21-25, **2020**).
105. **"Identificando biomarcadores basados en proteínas fluorescentes con imágenes no-invasivas por resonancia magnética"**. Micaela V. Kortsarz, Cristian R. Smulski, Gonzalo A. Álvarez. Contributed talk at 105a Reunión de la Asociación Física Argentina, Primera Webinar (Sept 21-25, **2020**).
106. **"Operating quantum sensors at their ultimate precision limit by optimization"**. Analia Zwick, V Mukherjee, D Suter, G Kurizki, G A Álvarez. QUANTUM 2020 International conference for the quantum science and technology community, (online, Oct 19-22, **2020**).
107. **"Quantum information spreading measured by out-of-time-order correlations with magnetic resonance".** M. C. Rodríguez, F. D. Domínguez, A. Zwick, G. A. Álvarez. Contributed talk at QUANTUM 2020 International conference for the quantum science and technology community, (online, Oct 19-22, **2020**).
108. **"Maximizing information obtainable by quantum sensors with the Quantum Zeno Effect".** B. M. Ronchi, A. Zwick, G. A. Álvarez. Contributed talk at QTURN 2020 Changing paradigms in quantum science (Online, Nov 23-27, **2020**).
109. **"Optimizing quantum sensors to their ultimate precision limits".** A. Zwick, M. Capiglioni, P. Jiménez, V. Mukherjee, D. Suter, G. Kurizki, and G. A. Álvarez. QTURN 2020 Changing paradigms in quantum science (Online, Nov 23-27, **2020**).
110. **"Using Path Integrals to Understand Noise Spectra Measured by a Quantum Sensor".** M. Kuffer, A. Zwick, G.A. Alvarez. QTURN 2020 Changing paradigms in quantum science (Online, Nov 23-27, **2020**).
111. **"Quantum information spreading measured by out-of-time-order correlations with magnetic resonance".** M.C. Rodríguez, F.D. Domínguez, A. Zwick, G.A. Álvarez. Contributed talk at QTURN 2020 Changing paradigms in quantum science (Online, Nov 23-27, **2020**)..
112. **"Decoherence scaling transition in the dynamics of quantum information scrambling".** F.D. Domínguez, M.C. Rodríguez, R. Kaiser, D. Suter and G.A. Álvarez. QTURN 2020 Changing paradigms in quantum science (Online, Nov 23-27, **2020**).
113. **"Internal gradient distribution tensors of white matter tracts models".** Jesus E. Fajardo, Gonzalo A. Álvarez. 2021 ISMRM & SMRT Annual Meeting & Exhibition (Online, 15-20 May **2021**).
114. **"Selective microstructure-size filters for non-invasive quantitative MRI"**. Milena Capiglioni, Analia Zwick, Pablo Jiménez, Gonzalo A. Alvarez. 2021 ISMRM & SMRT Annual Meeting & Exhibition (Online, 15-20 May **2021**).
115. **"Microstructure size-distribution estimations with smooth and sharp non-uniform oscillating gradient spin-echo modulations".** Melisa Giménez, Pablo Jiménez, Leonardo Pedraza, Diana Betancourth, Analía Zwick, Gonzalo A. Álvarez. 2021 ISMRM & SMRT Annual Meeting & Exhibition (Online, 15-20 May **2021**).
116. **"Hiperpolarización de espines nucleares 13C en polvos de nanodiamantes con vacancia-nitrógeno".** D. Miravetz, G. A. Álvarez. Contributed talk at Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2021**).
117. **"Tensores de gradientes internos generados por propiedades microestructurales con resonancia magnética nuclear"**. L.A. Pedraza, G. A. Álvarez. Poster at Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2021**).

118. **"Integrales de caminos para caracterizar y controlar efectos de decoherencia no-estacionarios mediante un sensor cuántico"**. M. Kuffer, A. Zwick, G. A. Álvarez. Poster at Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2021**).
119. **"Distribuciones de gradientes inducidos por susceptibilidad magnética en modelos de materia blanca"**. J. E. Fajardo Freites, G. A. Álvarez. Contributed talk at Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2021**).
120. **"Cuantificación de tamaños microestructurales con imágenes por resonancia magnética nuclear"**. M. L. Giménez, P. Jiménez, L. Pedraza, D. Betancourth, A. Zwick, G.A. Álvarez. Contributed talk at Reunión Anual INN CAB-CAC, Argentina (online) (Jul **2021**).
121. **"Selective microstructure-size filters for non-invasive quantitative imaging by magnetic Resonance"**. A. Zwick, M. Capiglioni, P. Jimenez, G.A. Alvarez. Poster at 106a Reunión de la Asociación Física Argentina, (online) Córdoba, Argentina (Oct 12-15, **2021**).
122. **"Maximizing information obtainable by quantum sensors with the Quantum Zeno Effect"**. A. Zwick, B. Ronchi, G.A. Alvarez. Poster at 106a Reunión de la Asociación Física Argentina, (online) Córdoba, Argentina (Oct 12-15, **2021**).
123. **"Distribuciones de gradientes inducidos por susceptibilidad magnética en modelos de materia blanca"**. J.E. Fajardo, G.A. Álvarez. Contributed talk at 106a Reunión de la Asociación Física Argentina, (online) Córdoba, Argentina (Oct 12-15, **2021**).
124. **"Integrales de caminos para caracterizar y controlar efectos de decoherencia no-estacionarios mediante un sensor cuántico"**. M. Kuffer, A. Zwick, G.A. Álvarez. Contributed talk at 106a Reunión de la Asociación Física Argentina, (online) Córdoba, Argentina (Oct 12-15, **2021**).
125. **"Integrales de caminos para caracterizar y controlar efectos de decoherencia no-estacionarios mediante un sensor cuántico"**. M. Kuffer, A. Zwick, G.A. Álvarez. Poster at <2020|Cuantos3|2021> Tercera Escuela y Taller Argentino de Cuántica. (Online) Instituto de Física La Plata, Argentina. (Nov 15-17 **2021**).
126. **"Quantum Zeno Effect for maximizing information of quantum-probes"**. A. Zwick, B. Ronchi, G.A. Álvarez. Poster at <2020|Cuantos3|2021> Tercera Escuela y Taller Argentino de Cuántica. (Online) Instituto de Física La Plata, Argentina. (Nov 15-17 **2021**).
127. **"Decoherence scaling transition in the dynamics of quantum information scrambling".** F.D. Domínguez, M.C. Rodríguez, R. Kaiser, D. Suter and G.A. Álvarez. Poster at Lattice-based Quantum Simulation, 726. WE-Heraeus-Seminar, Physikzentrum Bad Honnef (Online, Nov 28-Dec 01, **2021**).
128. **"Integrales de caminos para caracterizar y controlar la decoherencia inducida por entornos no estacionarios a través de un sensor cuántico"**, Martin Kuffer, Gonzalo A. Álvarez, Analía Zwick. Poster at the Workshop on topological quantum matter. Universidad Nacional de San Martin & Karlsruhe Institute of Technology, Buenos Aires, Argentina (April 4-8, **2022**).
129. **"Integrales de caminos para caracterizar y controlar la decoherencia inducida por entornos no estacionarios a través de un sensor cuántico"**, Martin Kuffer, Gonzalo A. Álvarez, Analía Zwick. Poster at Cuantos 4. Facultad de Ingeniería, Universidad Nacional de Mar del Plata – ICYTE, Mar del Plata, Argentina (April 20-22, **2022**).
130. **"Imágenes cuantitativas de microestructura con secuencias de gradientes oscilantes por resonancia magnética en fantoma de materia blanca"**. M.L. Giménez, L. Pedraza Pérez, P. Jiménez, A. Zwick, G.A. Álvarez. Contributed Talk at "107a Reunión de la Asociación Física Argentina", Bariloche, Argentina, Sept 27, **2022**.
131. **"Expansión en tensores de distribución de gradientes en microestructura de tejidos por imágenes de resonancia magnética"**. L. Pedraza Pérez, G.A. Álvarez. Contributed Talk at "107a Reunión de la Asociación Física Argentina", Bariloche, Argentina, Sept 27, **2022**.
132. **"Sensores cuánticos para medir un quench en su entorno"**. M. Kuffer, A. Zwick, G.A. Álvarez. Contributed Talk at "107a Reunión de la Asociación Física Argentina", Bariloche, Argentina, Sept 29, **2022**.
133. **"Filtros selectivos de dinámicas traslacionales de difusión molecular entre microestructuras de materia blanca con im´agenes por resonancia magnética"**. E. Saidman, G.A. Álvarez. Poster at "107a Reunión de la Asociación Física Argentina", Bariloche, Argentina, Sept **2022**.
134. **"Métodos no-invasivos para extraer información microestructural de tejidos en humanos: implementación en un resonador clínico"**. A. Zwick, E. Saidman, S. Tambalo, L. Novello, M. Moretto, J. Jovicich, G.A. Álvarez. Poster at "107a Reunión de la Asociación Física Argentina", Bariloche, Argentina, Sept **2022**.

Conferences

I have participated in 44 international conferences, in 17 Argentinean National Meetings and in one Israeli national meeting. See http://fisica.cab.cnea.gov.ar/galvarez/index.php/academic-data#Conferences

International Meetings:

- **Fourth J. J. Giambiagi Winter School: "Nanophysics, Nanoscience and Nanotechnology"**, Departamento de Física J. J. Giambiagi, Universidad de Buenos Aires, Buenos Aires – Argentina (July 22-26, **2002**).
- **Pan American Advanced Studied Institute (PASI) on Physics at the Nanometer Scale – PASI 2003** (June **2003**-San Carlos de Bariloche, Argentina).
- **Pan American Advanced Studied Institute (PASI) and Workshop on Physics of Information – PASI 2003** (December **2003**-Busios, Brasil).
- **Quantum symposium. Time of Challenges: Harnessing the Uncertainties of the Quantum World** (with the presence of Ahmed Sewail, Novel Price in Chemistry,1999), October **2005**, Córdoba, Argentina.
- **The 2005 Minerva-Gentner Symposium - A Dive into Magnetic Resonance**, December 11-15, **2005**-Eilat, Israel.
- **At the Frontiers of Condensed Matter III – New Trends in Structural, Electronic and Magnetic Properties of Matter**, December 11-15. **2006** – Buenos Aires, Argentina.
- **Quantum Information School and Workshop – Paraty 2007**, Paraty, Brazil (August 6-16, **2007**).

- **Summer School on Novel Quantum Phases and Non-equilibrium Phenomena in Cold Atomic Gases**, August 27th-September 7th **2007**, Abdus Salam ICTP – Trieste, Italy.
- **Network Meeting of the Alexander von Humboldt Foundation**, Bonn, Germany (April **2009**).
- **Annual Meeting of the Alexander von Humboldt Foundation**, Berlin, Germany (June **2009**).
- **International Workshop on Dynamical Decoupling** (IWODD) at National Institute of Standars and Technology (**NIST**), Boulder, Colorado, USA. (October **2009**).
- **Quantum Simulators** at Wilhelm und Else Heraeus Physikzentrum Bad Honnef, Germany (October **2009**).
- **School and conference on spin-based quantum information processing**, Konstanz, Germany (August **2010**).
- **International Conference: "Quantum technologies"**, Munich, Germany (May **2011**).
- **International workshop on Quantum Physics with Non-Hermitian Operators**, Dresden, Germany (June **2011**).
- **Euromar 2011**, Frankfurt, Germany (August **2011**).
- **Second International Conference on Quantum Error Correction**, Los Angeles, USA (December **2011**).
- **Quantum innovators workshop** at IQC, Waterloo, Canada (September **2012**).
- **Technion Workshop on Quantum Simulations** at Technion, Haifa, Israel (May **2013**).
- **Qstart** at the The Hebrew University, Jerusalem, Israel (June **2013**).
- **IV Quantum Information Workshop – Paraty 2013**, Paraty, Brazil (August **2013**).
- **The 12th International Bologna Conference on Magnetic Resonance in Porous Media (MRPM12),** Victoria University of Wellington, Wellington, New Zealand (February **2014**).
- **2014 COST meeting on Fundamental Problems in Quantum Physics**, Weizmann Institute, Israel (March **2014**).
- **Workshop "Echoes in Complex Systems"**, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany (**2014**).
- **"Coherence and Control in the Quantum World: Current and Future Trends"**, Weizmann Institute of Science (December **2014**, Rehovot, Israel)
- **Schulich Symposium "Modern Electron Spin Resonance - New Methodologies and new Applications"**, Technion, Haifa Israel (Feb. 4-6th, **2015**).
- **WE-Heraeus-Seminar on 'Quantum Correlations beyond Entanglement',** Bad Honnef, Germany (April 13-15, **2015**).
- **56th Experimental Nuclear Magnetic Resonance Conference (ENC)**, Asilomar Conference Center, Pacific Grove, California, USA (April 19-24, **2015**).
- **Quantum Biology**, Neve Ilan, Israel, (June 16, **2015**).
- **VII Ibero-American NMR meeting**, Cartagena de Indias, Colombia (3-6 October **2016**).
- **Workshop of the Escuela Jose Antonio Balseiro**, "Nuevas tendencias de Investigación en Física Médica", Instituto Balseiro, Bariloche, Argentina (October 24-25, **2016**).
- **Symposium "Frontiers in physical sciences"**, International Center for Advanced Studies (ICAS) and the Max Planck Liason Office for Latin America, in cooperation with the Kolleg Programme of the Alexander von Humboldt Foundation. Buenos Aires, Argentina (November 14-18, **2016**).
- **ICTP Workshop on Driven Quantum Systems**, Amancay Hotel, S. C. de Bariloche, Argentina (Nov. 28-Dec. 2, **2016**).
- **Workshop on the frontiers of photonics and light-matter interacting systems "What is bright with light"**, Amancay Hotel, S. C. de Bariloche, Argentina (Dec. 4-9, **2016**).
- **AVH-Kolleg: Current advances on neurodegeneration: from molecular biology to translational medicine**, Villa Carlos Paz, Cordoba, Argentina (Sep 28-Oct 1, **2017**).
- **Exploratory Workshop on Condensed Matter Physics**, Bariloche, Argentina (Nov 28 - Dec 1, **2017**).
- **XXIII Latin American Symposium on Solid State Physics (SLAFES XXIII)**, Bariloche, Argentina (April 10-13, **2018**).
- **Humboldt Colloquium "Shaping the Future of German-Argentinian Scientific Cooperation – The Role of Curiosity-Driven Research",** Buenos Aires, Argentina (October 25-27, **2018**).
- **Humboldt Kolleg Ecuador 2019: "Breaking Paradigms: Towards a Multi-, Inter- and Transdisciplinary Science"** In commemoration of the 250th Anniversary of Alexander von Humboldt. Ibarra, Ecuador (Feb 22-24, **2019**).
- **Kick Off Meeting del Proyecto Europeo PATHOS FET-open "Photonic and nAnomeTric High-sensitivity biO-Sensing"** https://pathos-fetopen.weebly.com/. Firenze, Italy (May 23-24 **2019**).
- **"Quantum 2019: From Foundations of Quantum Mechanics to Quantum Information and Quantum Metrology & Sensing"**, Torino, Italy (May 26-June 1 **2019**).
- **WORKSHOP ON QUANTUM FOUNDATIONS AND QUANTUM INFORMATION (celebrating Juan Pablo Paz's 60th birthday)**, Puerto Madryn, Argentina (Oct 29-Nov 1, **2019**).
- **QUANTUM 2020 International conference for the quantum science and technology community**, (online, Oct 19-22, **2020**).
- **2021 ISMRM & SMRT Annual Meeting & Exhibition** (Online,15-20 May **2021**).
- **2022 Joint Annual Meeting ISMRM-ESMRMB & ISMRT 31st Annual Meeting**. ExCeL London, London, UK **(**May 7-12, **2022**).
- **Humboldt Kolleg "Expanding the Frontiers of Science: A Transdisciplinary Approach"**, Montevideo, Uruguay, Oct 27-29, **2022**

National Meetings:

- **85ª Reunión Nacional de la Asociación Física Argentina** (September **2000**-Buenos Aires, Argentina).
- **86ª Reunión Nacional de la Asociación Física Argentina** (September **2001**-Rosario, Argentina).
- **87ª Reunión Nacional de la Asociación Física Argentina** (September **2002**-Huerta Grande, Córdoba, Argentina).

- **2º Taller Regional de Física Estadística y sus Aplicaciones a la Física de la Materia Condensada (TREFEMAC'04)**, 27-28 May **2004**-Córdoba, Argentina.
- **89ª Reunión Nacional de la Asociación Física Argentina**, September **2004**-Bahía Blanca, Buenos Aires, Argentina.
- **90ª Reunión Nacional de la Asociación Física Argentina**, September **2005**-La Plata, Buenos Aires, Argentina.
- **91ª Reunión Nacional de la Asociación Física Argentina** (Septiembre **2006**-Merlo, San Luis).
- **Sólidos 2007,** November **2007**, Huerta Grande, Córdoba, Argentina.
- **Israel Magnetic Resonance Annual Meeting**, Haifa, Israel (June **2014**).
- **"Evento Inaugural Asociación de Amigos del Instituto Weizmann en Argentina"**, Grupo INSUD, Buenos Aires, Argentina (Apr 24, **2017**).
- **"Reunión INN CAB-CAC"**, Bariloche, Argentina (May 21, **2017**).
- **102a Reunión Nacional de la Asociación Física Argentina**, La Plata, Buenos Aires, Argentina (Sep 26-29, **2017**).
- **IV Taller de Resonancia Magnética",** Ciudad Autónoma de Buenos Aires, Argentina (Sep 6-7, **2018**).
- **103a Reunión de la Asociación Física Argentina**, Buenos Aires (Sept 17-19, **2018**).
- **Conferencia internacional: Actualización en resonancia magnética aplicada a neurociencias,** FLENI, Buenos Aires, Argentina (Sep 19, **2018**).
- **V Curso de Verano: "Introducción a la Radioterapia y a la Medicina Nuclear"**, INTECNUS, CNEA, Bariloche, Argentina (Jan 20-26, **2019**).
- **105a Reunión de la Asociación Física Argentina**, Primera Webinar (Sept 21-25, **2020**).
- **"Reunión INN CAB-CAC"**, Online, Argentina (July 19-22, **2021**).
- **106a Reunión de la Asociación Física Argentina**, (Online) Córdoba, Argentina (Oct 12-15, **2021**).
- **107a Reunión de la Asociación Física Argentina**, Bariloche, Argentina (Sept 27-30, **2022**).

Brief Description of my work

My research activity is directed towards exploiting hitherto unexplored foundations of quantum control methods for tailoring spin evolutions in order to develop novel technologies and applications in the areas of nuclear magnetic resonance spectroscopy (NMR) and imaging (MRI). The main topic of my publications is about the spin dynamics of open quantum systems interacting with environments focusing on the characterization of the system dynamics and how it is modified by the environment (decoherence and dissipation). At the practical level, using both NMR experiments and theoretical tools, I am exploiting that by monitoring the changes on the system due to the environmental effects, one can sense the environment for characterizing physical, chemical, biological and medical processes to lead to new applications and quantum technologies in magnetic resonance. At the fundamental level, the understanding and control of quantum interference phenomena, and in particular the propagation of spin excitations can improve our comprehension and control of quantum systems, their decoherence and irreversible processes.