The standard Laplace operator

The standard Laplace operator is a generalization of the Hodge-Laplace operator on differential forms to arbitrary geometric vector bundles. Alternatively it can be seen as a generalization of the Casimir operator acting on sections of homogeneous vector bundles over symmetric spaces to general Riemannian manifolds.

In my talk I will discuss the definition of the standard Laplace operator and its universal properties. The main result of my talk will be a commutator formula, showing that the standard Laplace operator commutes with a large class of natural first order differential operators. This result will be illustrated in several examples.

My talk is based on a joint article with G. Weingart.