

## "Introduction to the Minimal Model Program in Algebraic Geometry"

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The Minimal Model Program (MMP) is one of the most important achievements in modern Complex Algebraic Geometry. It aims at the classification of complex projective manifolds according to the sign of their canonical class.

The classification of curves was already known to Riemann: there is a natural division into three classes: genus 0 (positive curvature), genus 1 (zero curvature) and genus  $>1$  (negative curvature). The classification in higher dimensions is inspired by this trichotomy. For surfaces it was completed by the Italian school in the beginning of the 20th century. In dimension 3, new complications arrive, such as the unavoidable presence of singularities. With the contribution of many mathematicians, these complications were overcome, and the MMP for 3-folds was established by Mori in 1988, earning him the Fields medal in 1990. Recently, in 2006, Birkar, Cascini, Hacon and McKernan established an instance of the MMP in arbitrary dimension.

In these lectures we will introduce the basics of MMP. After reviewing the classical results for surfaces, we will move to higher dimensions and discuss some of the new ingredients needed there, such as singularities of the MMP, flips, flops, etc.