

Birational geometry of Calabi-Yau pairs

Carolina Araujo

IMPA, Brazil

The concept of a pair has become standard in modern algebraic geometry. One of its key motivations arises from Iitaka's program in the 1970s, which aimed to classify open varieties U . The approach involves compactifying U into a projective variety X by adding a boundary divisor D , and then studying the geometry of U through the pair (X, D) . Over time, the theory of pairs has evolved significantly and has become a cornerstone of birational geometry. After reviewing some historical developments in the theory of pairs, we turn our attention to “Calabi-Yau pairs”. In particular, we present a framework, developed in collaboration with Alessio Corti and Alex Massarenti, which allows one to explicitly describe the birational geometry of Calabi-Yau pairs.

In Special Session 30 on Birational Geometry and Singularities at the Mathematical Congress of the Americas 2025.