Universität Basel

Research Project

Birational transformations of threefolds

Third-party funded project

Project title Birational transformations of threefolds
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The aim of this project is to study the groups Bir(X), where X is a complex algebraic variety, and to understand the structure of such groups, in particular when X is a threefold. The cases where the group is the largest is the case where X is rational, in which case Bir(X) is the Cremona group. There are however some varieties X not too far from rational ones where the group Bir(X) is large (cubic threefolds for instance), and the comparison between groups of birational transformations helps to describe differences betwen the varieties.Recently, some breakthroughs appeared for Bir(Pˆ2), namely on the structure of the group, its structure and dynamics. The advances made in dimension higher are significantly smaller. We plan to use the recent techniques developed and to adapt these to study the dimension 3 and more. We will also apply tools of birational geometry to open questions of affine algebraic geometry, combining the two worlds in order to obtain new results.

Keywords dynamics; group theory; affine algebraic geometry; threefolds; projective algebraic geometry; birational transformations
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