$\mathbb{C}^{\star}$-actions from the viewpoint of birational geometry

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Abstract

In this talk we focus on complex, smooth, projective varieties admitting a non-trivial $\mathbb{C}^{\star}$-action. We introduce a new approach to investigate such varieties, using instruments coming from birational geometry. In particular, we relate small bandwidth varieties with Atiyah flips and special Cremona transformations. We report recent classification results of small bandwidth varieties, with particular attention to the case of bandwidth 3. We finally discuss some applications, in the framework of LeBrun-Salamon conjecture and Mori dream spaces. This is a joint project with G. Occhetta, L. Solá Conde and J. Wiśniewski.

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