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Compactifications of Genus Zero Curves and Grassmann manifolds

Svjetlana Terzić

University of Montenegro
e-mail: sterzic@ucg.ac.me
ORCID: 0000-0002-7014-0936

Abstract. The moduli compactifications of the moduli space $\mathcal{M}_{0,n}$ of genus-zero curves with n distinct, ordered marked points are foundational concepts in algebraic geometry, string theory, and topology. These compactifications start with the Deligne-Mumford-Knudsen compactification given by stable genus-zero curves, followed by its iterated blow-up description obtained by Keel, its description in terms of Chow-quotient given by Kapranov, as well as the Losev and Manin compactifications based on colourings of marked points by black and white. In 2003. Hassett introduced a family of compactifications, consisting of the weighted pointed stable curves, and this family cover all previously obtained compactifications.

We show that a majority of Hassett's compactifications, and in that context all mentioned, can be explicitly realised within the framework of our description of the standard T^n-equivariant topology of the Grassmann manifolds $G_{n,2}$. In particular, we show that many of them can be realised by smooth manifolds in $G_{n,2}/T^n$ obtained as the T^n-orbit spaces of the preimages of the regular values of the standard moment map.

The talk is partly based on a joint work with Victor M. Buchstaber and Vladimir Ivanović.

Keywords: Grassmann manifold; torus action; moduli spaces; genus zero curves.

References

[1] **V. M. Buchstaber and S. Terzić**, A resolution of singularities for the orbit spaces $G_{n,2}/T^n$. *Trudy Mat. Inst. Steklova*, 2022, 317, 27–63.

[2] **V. M. Buchstaber and S. Terzić**, Moduli spaces of weighted pointed stable curves and toric topology of Grassmann manifolds *Journal of Geometry and Physics*, 2025, 215, 105533.

[3] **B. Hassett**, Moduli spaces of weighted pointed stable curves *Advances in Mathematics*, 2023, 173 (2), 316–352.

[4] **V. Ivanović, S. Terzić**, Grassmann hyperplane arrangements and moduli spaces of weighted pointed stable curves, *preprint*, 2026.