北京理工大學

数学与统计学院学术报告

On the orbit space of a maximal compact subgroup acting on a spherical homogeneous variety

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时间： 2025年10月10日16：00-17：30

地点： 腾讯会议：984-301-829（密码：251010）

摘要： Let $X = G/H$ be a spherical homogeneous variety for a complex reductive algebraic group G. We consider the action of a maximal compact subgroup $K < G$ on X. Victor Batyrev conjectured around 2016 that the orbit space X/K is homeomorphic to the so-called valuation cone V of X, which is a convex polyhedral cone whose rational points parametrize G-invariant discrete $\mathbf{Q}$-valued valuations of the field $\mathbf{C}(X)$. (This conjecture was announced recently in arXiv:2403.09091.) The "non-archimedian" version of this conjecture holds true, due to D. Luna and Th. Vust (1983): the set $V(\mathbf{Q})$ is in bijection with the orbit space of $X(\mathbf{F})$ under the action of the semi-direct product of $G(\mathbf{O})$ and $\mathrm{Aut}(\mathbf{O})$, where $\mathbf{F}$ is the field of Puiseux series (= the algebraic closure of $\mathbf{C}((t))$) and $\mathbf{O}$ is its ring of integers. We prove Batyrev's conjecture by considering a homeomorphic embedding of X/K into the moment polytope P of a projective closure of X. We also discuss relation between the face stratifications of V and P and the orbit type stratification of X/K.

报告人简介： Дмитрий A. Тимашёв（Dmitry A. Timashev），莫斯科国立大学力学—数学系教授。从事Lie群与Lie代数、代数变换群、代数几何、不变量理论等方面研究，在等变嵌入、球状簇、ζ-群等方面取得了许多重要成果，著有多篇（部）本领域知名论文和专著。

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