

ALGEBRAIC GEOMETRY AND COMMUTATIVE ALGEBRA SEMINAR

Speaker: András Lőrincz
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Date: Wednesday, March 29, 2023

Time: 3:00 PM

Location: 258 Hurley Hall

Zoom URL: NA

Lecture Title:

On the collapsing of homogeneous bundles

Abstract

I present results on the geometry of equivariant, proper maps from homogeneous bundles over flag varieties, called collapsing maps. Kempf showed that the image of a collapsing map has rational singularities in characteristic zero when the bundle is completely reducible. We extend this to positive characteristics showing that such an image is strongly F-regular if its coordinate ring has a good filtration. We further prove that the restrictions of such collapsing maps to Schubert varieties are F-rational in positive characteristic and have rational singularities in characteristic zero. These results give a uniform, characteristic-free approach for the study of the geometry of some remarkable varieties, such as: multicones over Schubert varieties, various determinantal varieties in spaces of matrices, Buchsbaum-Eisenbud varieties of complexes, subspace varieties, higher rank varieties.