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Monday, October 4, 2021

Time: 4:00 p.m.

Location: Weber 223

Title: Searching for Mori Dream Spaces

Abstract: Mori dream spaces were defined by Hu and Keel to connect the minimal model program in birational geometry to geometric invariant theory. Along the lines of Hilbert's 14th problem, a space is a Mori dream space if a certain associated ring is finitely generated. This finiteness property makes Mori dream spaces an interesting and useful class of spaces in algebraic and arithmetic geometry.

Many familiar spaces from algebraic geometry (flag varieties, complete symmetric spaces, toric varieties) end up being Mori dream spaces. On the other hand, results of Castravet, Tevelev, Mukai, Karu, Gonzales, and others show that it's possible to do "nice" things to "nice" spaces and break the Mori dream space property. Determining just what goes wrong in a given case can be a subtle mixture of commutative algebra, algebraic geometry, and combinatorics.

I'll give a general introduction to Mori dream spaces, and then describe some recent progress in determining this property for spaces called toric bundles. This class of spaces has the benefit of being combinatorially described, and comes replete with both examples and non-examples.

