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The combinatorics of toric flag bundles and the Mori dream space property

A Mori dream space is a normal, projective variety whose Cox ring is finitely generated. Projective toric varieties and the flag varieties of a semisimple group are perhaps the two most recognizable classes of spaces with this property. Accordingly, it's natural to ask when a combination of these spaces is a Mori dream space. We consider the case of toric flag bundles, namely bundles of flag varieties over a projective toric variety equipped with an action by the big torus. This is a subtle question, as even bundles of projective spaces over a toric variety can fail to be Mori dream spaces. We'll present a few theorems about Mori dream space flag bundles which link this property to the combinatorial geometry of spherical buildings and tropicalized linear spaces, and we'll describe how the answer in type A is related to a question about representation stability. This is joint work with Courtney George.