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Representation stability of families of linear subspace arrangements.

Church-Ellenberg-Farb used the language of FI-modules to prove that the cohomology of certain sequences of hyperplane arrangements with S_n -actions satisfies representation stability. I will introduce a lift of their results to the level of the arrangements themselves, and define when a collection of arrangements is “finitely generated”. Using this notion we can greatly widen the stability results to:

- General linear-subspace arrangements, not necessarily of hyperplanes.
- A wide class of group actions, replacing FI by a general category \mathcal{C} .

The cohomology of such collections of arrangements satisfies a strong form of representation stability, with many concrete applications. For example, this implies that their Betti numbers are always given by certain polynomials. (Received July 13, 2016)