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Smaller resolutions of Pfaffian varieties

A rank variety is the locus of matrices of some kind having rank less than or equal to some fixed non-negative integer. Typically, rank varieties are singular and have standard resolutions given by total spaces of vector bundles over Grassmannians. When such resolutions are small, the cohomology of the resolution is isomorphic to the intersection cohomology of the rank variety.

In the case of a skew-symmetric rank variety, the standard resolution fails to be small and we show how to replace it with a smaller non-commutative resolution whose Grothendieck group is isomorphic to the intersection cohomology of the rank variety.