

# Line singularities and Grassmannian cluster structures

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This talk is about a categorification of the coordinate rings of Grassmannians of infinite rank in terms of graded maximal Cohen-Macaulay modules over the commutative ring  $C[x, y]/(x^k)$ . This yields an infinite rank analogue of the Grassmannian cluster categories introduced by Jensen, King, and Su. In the special case  $k=2$ ,  $\text{Spec}(C[x, y]/(x^2))$  is a type  $A_\infty$ -curve singularity and the ungraded version of our category has been studied by Buchweitz, Greuel, and Schreyer in the 1980s. We show that this Frobenius category has infinite type A cluster combinatorics, in particular, that it has cluster-tilting subcategories modelled by certain triangulations of the (completed) infinity-gon. We use the Frobenius structure to extend this further to consider maximal almost rigid subcategories, and show that these subcategories and their mutations exhibit the combinatorics of the completed infinity-gon. This is joint work with Jenny August, Man-Wai Cheung, Sira Gratz, and Sibylle Schroll.