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Title: Skein-triangulated representations of generalised braids

Abstract: The braid group Br_n encodes configurations of n non-touching vertical strands (“braids”) up to continuous transformations. There are many examples where Br_n acts on the derived category of an algebraic variety: the minimal resolutions of Kleinian singularities, the cotangent bundles of flag varieties, etc.

In this talk, I introduce a new structure: the category GBr_n of generalised braids. These are the braids whose strands are allowed to touch in a certain way. For triangulated categories, it is natural to impose certain relations which result in the notion of a skein-triangulated representation of GBr_n . These relations generalise the famous skein relation used to define oriented link invariants such as Jones polynomial.

We give two examples of skein-triangulated actions of GBr_n : on the cotangent bundles of varieties of full and partial flags in C^n and on categorical nil-Hecke algebras. The latter example shows that any categorical action of Br_n can be lifted to a skein-triangulated action of GBr_n , generalising a result of Ed Segal for $n = 2$. This is a joint work with Rina Anno.