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Mutations of noncommutative crepant resolutions in geometric invariant theory

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For a generic quasi-symmetric representation X of a reductive group G, Halpern-Leistner and Sam show that the derived category of coherent sheaves on a GIT (stacky) quotient of X is equivalent to magic windows, which are certain triangulated subcategories of the derived categories of coherent sheaves on the quotient stack [X/G]. In this talk, we explain that the equivalences of magic windows, which correspond to wall-crossings in a hyperplane arrangement, correspond to derived equivalences of noncommutative crepant resolutions induced by tilting modules, and these tilting modules are obtained by certain operations of modules, which we call exchanges of modules. This talk is based on joint work with Wahei Hara.

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