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Iva Halacheva* (i.halacheva@northeastern.edu), **Anthony Licata**, **Ivan Losev** and **Oded Yacobi**. *The cactus group and perverse equivalences*. Preliminary report.

Given a categorical \mathfrak{g} -action on an abelian category \mathcal{C} , where \mathfrak{g} is a semisimple Lie algebra, Chuang and Rouquier construct so called Rickard complexes, one for each simple root of \mathfrak{g} , which act as equivalences on the derived category $D^b(\mathcal{C})$. These complexes satisfy the braid relations for \mathfrak{g} , as shown by Cautis and Kamnitzer, and hence give an action of the braid group. We show that the complex corresponding to the positive lift of the longest Weyl group element (of any parabolic in \mathfrak{g}) is a perverse equivalence on $D^b(\mathcal{C})$. Hence, it induces a bijection on the irreducible objects of \mathcal{C} , and recovers the cactus group action on the corresponding \mathfrak{g} -crystal. This is joint work in progress with Tony Licata, Ivan Losev, and Oded Yacobi. (Received August 31, 2020)