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Tina Kanstrup* (tkanstrup@umass.edu). *Braid group actions in geometric representation theory and applications to link homology*. Preliminary report.

The motivation behind this work in progress is to unify different approaches to Khovanov-Rozansky triply graded link homology, HHH. By an old theorem of Markov links up to isotopy is equivalent to braids up to the so called Markov moves. Therefore, braid group actions, which already play a central role in geometric representation theory, provides a natural starting point for algebro-geometric realizations of link homologies. Many such braid group actions are known on e.g. Soergel bimodules, mixed Hodge D-modules, Coherent sheaves, and Matrix Factorizations. There exist several different (some of them conjectural) algebro-geometric approaches to calculating HHH utilizing the above categories. The goal of this project is to unite some of them by relating the geometry of the categories used in the different approaches. (Received January 25, 2022)