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Tina Kanstrup* (tkanstrup@umass.edu). *Link homologies and Hilbert schemes via representation theory*. Preliminary report.

The aim of this joint work in progress with Roman Bezrukavnikov is to unite different approaches to Khovanov-Rozansky triply graded link homology. The original definition is completely algebraic in terms of Soergel bimodules. It has been conjectured by Gorsky, Negut and Rasmussen that it can also be calculated geometrically in terms of cohomology of sheaves on Hilbert schemes. Motivated by string theory Oblomkov and Rozansky constructed a link invariant in terms of matrix factorizations on related spaces and later proved that it coincides with Khovanov-Rozansky homology. In this talk I'll discuss a direct relation between the different constructions and how one might invent these spaces starting directly from definitions. (Received March 08, 2021)