

Matrix factorizations and Soergel bimodules

Alexei Oblomkov, UMASS Amherst

Based on the joint project with Lev Rozansky.

We construct a geometric version of the Ocneanu-Jones trace:

$\text{Tr}: \text{Br}_n \rightarrow D^{\text{per}}(\text{Hilb}_n(\mathbb{C}^2))$ where $D^{\text{per}}(\text{Hilb}_n(\mathbb{C}^2))$ is the derived category of the two periodic complexes of coherent sheaves on $\text{Hilb}_n(\mathbb{C}^2)$.

We show that we can recover the Khovanov-Rozansky link invariants, which defined with Rouquier complexes of Soergel bimodules, from our geometric trace. In particular, we show that the Khovanov-Rozansky homology satisfy the Poincare duality and the full twist acts is related to the twist by the ample line bundle. Our results also provide yet another method for computation of the Khovanov-Rozansky homology of the torus links.