

McKay correspondence for $\text{Hilb}^n(\mathbb{C}^3)$, categorical DT theory and geometric Langlands

Monday, 18 December 2023 10:00 (50 minutes)

The McKay correspondence for $\text{Hilb}^n(\mathbb{C}^2)$ is its derived equivalence with $\mathbb{C}^{\{2n\}}/S_n$, proven by Bridgeland-King-Reid and Haiman. In this talk, I will explain how to give its version for $\text{Hilb}^n(\mathbb{C}^3)$ using categorical DT theory and its categorical wall-crossing formula. It involves semiorthogonal decomposition with factors categorical Hall products of quasi-BPS categories, which we conjecture to be equivalent to the category of matrix factorizations over $\mathbb{C}^{\{3n\}}/S_n$ with zero potential. I explain that how (a variant of) the above conjecture is implied by Betti geometric Langlands conjecture. This is a part of my series of joint works with Tudor Padurariu.

Presenter: TODA, Yukinobu (Tokyo)