



Motivic Donaldson-Thomas invariants and McKay correspondence

Sergey Mozgovoy

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Let $G \subset SL_2(\mathbb{C}) \subset SL_3(\mathbb{C})$ be a finite group. We compute motivic Pandharipande-Thomas and Donaldson-Thomas invariants of the crepant resolution $\text{Hilb}^G(\mathbb{C}^3)$ of \mathbb{C}^3/G generalizing results of Gholampour and Jiang who computed numerical DT/PT invariants using localization techniques. Our formulas rely on the computation of motivic Donaldson-Thomas invariants for a special class of quivers with potentials. We show that these motivic Donaldson-Thomas invariants are closely related to the polynomials counting absolutely indecomposable quiver representations over finite fields introduced by Kac. We formulate a conjecture on the positivity of Donaldson-Thomas invariants for a broad class of quivers with potentials. This conjecture, if true, implies the Kac positivity conjecture for arbitrary quivers.

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