

Knot homologies and BPS states

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Session: Knot Theory

Interactions between knot theory, quantum field theory, and string theory have always been very fruitful, and various ideas in physics often led to important results in knot theory. Examples of such results include reformulation of knot polynomials as quantum correlators in Chern-Simons theory, or a discovery of integral Ooguri-Vafa invariants. One of the most exciting current developments at the border of knot theory and physics relate to reinterpretation of knot homologies as spaces of BPS states in D-brane systems in string theory. In this talk I will review some recent results in this context, and – in particular – present conjectural form of so-called colored superpolynomials for various knots, which have been determined based on insights from physics.