

3d N=2 theory and knot complements

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Gukov, Putrov, and Vafa used the physical 3d N = 2 theory $T[M_3]$ to predict the existence of some 3-manifold invariants \hat{Z} that take the form of power series converging in the unit disk. Their radial limits at the roots of unity should recover the Witten-Reshetikhin-Turaev invariants. Furthermore, the power series should have integer coefficients, and admit a categorification in the spirit of Khovanov homology. In this talk I will explain what the analogue of the invariants \hat{Z} should be for knot complements, and discuss a Dehn surgery formula. For knots in S^3 , our predicted invariants should be obtained by parametric resurgence from the Vassiliev invariants. We provide explicit calculations in the case of knots given by negative definite plumbings with an unframed vertex, such as torus knots. The talk is based on joint work with Sergei Gukov.