

Path Integral Derivations of K-theoretic Donaldson Invariants

Wednesday, March 5, 2025 10:00 AM (1 hour)

I will discuss the formulation of 5-dimensional $N=1$ supersymmetric Yang-Mills theory on X times a circle S^1 , with X a smooth, compact four-manifold. We include a partial topological twist on X . The 5-dimensional theory can then be reduced to a 4-dimensional Kaluza-Klein theory on X , or to a 1-dimensional theory on S^1 . For either reduction, we demonstrate that correlation functions evaluate to K-theoretic Donaldson invariants, such as the Dirac index or holomorphic Euler characteristic of moduli spaces of instantons on X . Explicit evaluation demonstrates agreement with results for algebraic surfaces by Gottsche, Kool, Nakajima and Yoshioka. Based on work in progress with H. Kim, G. Moore, R. Tao, X. Zhang.

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