

General instanton counting and 5d SCFT

Tuesday, 19 August 2014 14:00 (1 hour)

Instanton partition functions of 5d $N=1$ gauge theories are Witten indices for the ADHM gauged quantum mechanics with (0,4) SUSY. We derive the integral contour prescriptions for these indices using the Jeffrey-Kirwan method, for gauge theories with hypermultiplets in various representations. The results can be used to study various 4d/5d/6d QFTs. In this paper, we study 5d SCFTs which are at the UV fixed points of 5d SYM theories. In particular, we focus on the $Sp(N)$ theories with $N_f < 8$ fundamental and 1 antisymmetric hypermultiplets, living on the D4-D8-O8 systems. Their superconformal indices calculated from instantons all show E type symmetry enhancements. It is crucial to understand the UV incompleteness of the 5d SYM, coming from small instantons in our problem. We explain in our examples how to fix them.

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