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Intersecting Defects: the Supergroup Side and Geometric Transitions

Monday, July 4, 2022 2:30 PM (1 hour)

We consider the BPS intersecting defects that arise upon Higgsing a parent 5d SUSY gauge theory in the Ω-background. They are described by pairs of 3d N=2 SUSY gauge theories interacting through 1d matter at the intersection. We explore the relations between instanton and generalized vortex calculus, pointing out a duality between intersecting defects subject to the generic Ω-background and a deformation of supergroup gauge theories, the exact supergroup point being achieved in the self-dual or unrefined limit. Embedding the setup into refined topological strings, in the simplest case when the parent 5d theory is Abelian we are able to identify the dual of the intersecting defects as the supergroup version of refined Chern–Simons theory via a generalized open/closed duality or geometric transition. We also discuss the BPS/CFT side of the correspondence, finding an interesting large rank duality with equivariant super-instanton counting. This motivates to study diverse Higgsings of a bigger 5d SUSY supergroup gauge theory, which allows us to connect the partition functions of different defect theories via analytic continuation in some of the parameters.

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