

Dualities in SUSY Gauge Theories in Various Dimensions

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Seiberg duality is an infrared equivalence of two 4d, $N=1$ gauge theories first proposed by Seiberg in 1994. More recently a triality relating 2d, $(0,2)$ theories and a quadrality relating 0d, $N=1$ matrix models have been discovered, both of these can be viewed as generalizations of Seiberg duality to lower dimensions. We illustrate these dualities with the help of simple examples arising on worldvolume of D-branes probing certain Calabi-Yau singularities. These Calabi-Yau are a higher dimensional generalization of conifold singularity. Applying triality and quadrality to them uncovers similarities to duality cascade for conifold discovered by Klebanov and Strassler.

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