

Remarks on Correspondences from Geometric Engineering

I will briefly review a strategy to obtain correspondences between supersymmetric quantum field theories in various dimensions building upon geometric engineering techniques. Several new applications and examples will be presented, highlighting the interconnections with the enumerative geometry of backgrounds with special holonomy. In particular, we will include some results about the higher Donaldson-Thomas theory for Calabi-Yau three-folds and 5d BPS quivers, some applications in the context of certain classes of G2 manifolds, and also some ideas in the context of generalizations of level/rank dualities for Vafa-Witten partition functions on ALE spaces.

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