

3d Dualities and Monopole Superpotentials

S. Benvenuti
(SISSA)

We start considering the problem of a D3 brane ending on pq webs of 5 branes. We find the $N=2$ 3d theories describing the systems and show that they admit different dual descriptions, related by 'piece-wise' Abelian mirror symmetry. Interestingly, some of the dual phases involve monopole operators in the superpotential. In the simplest case, $U(1)$ with 3 flavors and monopole superpotential has a dual description as a cubic Wess-Zumino model. When projected to the S^3 partition function, this duality gives a physical explanation of an integral identity known as 'new pentagon' or 'ultimate integral'. We also consider generalizations to non Abelian gauge theories, leading to Aharony-Seiberg dualities with monopole superpotentials.

Based on <http://arxiv.org/pdf/1605.02675.pdf>, S.B. and Sara Pasquetti.