

## Supersymmetric partition function and higher dimensional A-twist

*Tuesday, 18 July 2017 15:00 (1 hour)*

I will talk about three-dimensional  $N=2$  supersymmetric gauge theories on  $M_{\{g,p\}}$ , a circle bundle of degree  $p$  over a genus  $g$  Riemann surface. We compute the supersymmetric partition functions on  $M_{\{g,p\}}$  and correlation functions of BPS loop operators. We also consider four-dimensional uplift of this construction, which computes the generalized index of  $N=1$  gauge theories defined on elliptic fibration over genus  $g$  Riemann surface. We find that the partition function or index can be written as a sum over “Bethe vacua” of two-dimensional A-twisted theory obtained by compactification. With this framework, we will see how the partition functions on manifolds with different topologies are related to each other. It also provides a novel tool to study various supersymmetric dualities, which allows us to study the action of the dualities on the co-dimension two BPS operators.

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