

Poster title: The Art of Pestunization

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We analyze $\mathcal{N} = 2$ supersymmetric Yang-Mills theory on 4D simply connected manifolds equipped with T^2 -action with isolated fixed points. It turns out that for every fixed point one can allocate either instanton or anti-instanton contributions in the partition function, and that this is compatible with supersymmetry. The equivariant Donaldson-Witten theory is a special case of our construction, which gives a unified treatment of Pestun's calculation on S^4 and the equivariant Donaldson-Witten theory by generalizing the notion of self-duality on the manifolds with a vector field. We derive the full partition function for $\mathcal{N} = 2$ theories on any 4D simply connected toric manifold.