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Tetrahedron instantons

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I will describe my work arXiv:2106.11611 with Elli Pomoni and Wenbin Yan. We introduce and study tetrahedron instantons, which can be realized in string theory by D1-branes probing a configuration of intersecting D7-branes in flat spacetime with a nonzero constant background B-field. Physically they capture instantons on Cˆ3 in the presence of the most general intersecting codimention-two supersymmetric defects. Moreover, we construct the tetrahedron instantons as particular solutions of general instanton equations in noncommutative field theory. We analyze the moduli space of tetrahedron instantons and discuss the geometric interpretations. We compute the instanton partition function, which lies between the higher-rank Donaldson-Thomas invariants on Cˆ3 and the partition function of the magnificent four model.

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