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## Supersymmetry non-renormalization theorem from a computer and the AdS/CFT correspondence

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We perform Monte Carlo simulation of the plane-wave matrix model or the BMN matrix model, which has 16 supercharges. The model has many degenerate supersymmetric vacua, and by picking up a particular one, we can obtain 4d  $N = 4$  super Yang-Mills theory on  $R \times S^3$  in the planar limit based on the idea of a novel large- $N$  reduction. We study correlation functions of non-extremal operators, and find clear evidence that the supersymmetry non-renormalization theorem is at work for two-point and three-point functions for general backgrounds. This suggests that the theorem actually holds in a wide class of supersymmetric theories other than 4d  $N = 4$  super Yang-Mills theory, in which it was already proven. For four-point functions, we observe small violation of the non-renormalization property, which is consistent with a result obtained from the AdS/CFT correspondence.

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talk

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