

Bootstrapping $N = 4$ SYM for all N and coupling

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We combine supersymmetric localization with the numerical conformal bootstrap to bound the scaling dimension and OPE coefficient of the lowest-dimension operator in $N = 4$ $SU(N)$ super-Yang-Mills theory for a wide range of N and Yang-Mills couplings g . We find that our bounds are approximately saturated by weak coupling results at small g . Furthermore, at large N our bounds interpolate between integrability results for the Konishi operator at small g and strong-coupling results, including the first few stringy corrections, for the lowest-dimension double-trace operator at large g . In particular, our scaling dimension bounds describe the level splitting between the single- and double-trace operators at intermediate coupling.

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