

Abstract

We study the $N = 4$ SYM stress tensor multiplet 4-point function for any value of the complexified coupling τ , and in principle any gauge group (we focus on $SU(2)$ and $SU(3)$ for simplicity). By combining non-perturbative constraints from the numerical bootstrap with two exact constraints from supersymmetric localization, we are able to compute upper bounds on low-lying CFT data (e.g. the Konishi) for any value of τ . These upper bounds are very close to the 4-loop weak coupling predictions in the appropriate regime. We also give preliminary evidence that these upper bounds become small islands under reasonable assumptions, in which case our method would provide a numerical solution to $N = 4$ SYM for any gauge group and τ .