



## Large-N Wilsonian beta function in SU(N) Yang-Mills theory by localization on the fixed points of a semigroup contracting the functional measure

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In a certain (non-commutative) version of large-N SU(N) Yang-Mills theory there are special Wilson loops, called twistor Wilson loops for geometrical reasons, whose v.e.v. is independent on the parameter that occurs in their operator definition. There is a semigroup that acts on the parameter by rescaling and on the functional measure, resolved into anti-selfdual orbits by a non-supersymmetric version of the Nicolai map, by contracting the support of the measure. As a consequence the twistor Wilson loops are localized on the fixed points of the semigroup of contractions. This localization is a non-supersymmetric analogue of the localization that occurs in the Nekrasov partition function of the  $n=2$  SUSY YM theory on the fixed points of a certain torus action on the moduli space of (non-commutative) instantons. One main consequence of the localization in the large-N YM case, as in the  $n=2$  SUSY YM case, is that the beta function of the Wilsonian coupling constant in the anti-selfdual variables is one-loop exact. Consequently the large-N Yang-Mills canonical beta function has a NSVZ form that reproduces the first two universal perturbative coefficients.

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