

Large N asymptotics of characters and partition functions: positive and negative results

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Abstract

First I will review the conjectures of Gross-Taylor, Gross-Matytsin, Douglas-Kazakov and Kazakov-Wynter on the large N asymptotics of partition functions and characters of $U(N)$ gauge theory on a Riemann surface. Then I will present two negative results (one is joint work with T. Tate), showing that the conjectured large N asymptotics of the partition function on the cylinder and of characters do not always hold. I will almost mention some positive results and what they seem to indicate about the validity of the conjectures.