



EINLADUNG

im Rahmen des Seminars für Mathematische Physik

zum Vortrag

von

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über

***„Renormalization in large-N QCD
and open/closed string duality“***

Abstract:

We demonstrate that the asymptotic freedom and renormalization group imply that the large- N 't Hooft expansion of the YM S matrix is ultraviolet (UV) finite nonperturbatively, while the large- N expansion of the QCD S matrix is only renormalizable, due to UV divergences starting from the order of N_f/N , with N_f the number of quark flavors. We investigate the compatibility of the aforementioned renormalization properties with the existence of a supposed canonical string solution, matching the topology of 't Hooft large- N expansion, for the S matrix of large- N YM theory and QCD. The UV finiteness of the large- N YM S matrix is compatible with the universally believed UV finiteness of closed string theories. Yet, we demonstrate that the aforementioned renormalization properties of the large- N QCD S matrix to the order of N_f/N are incompatible with the open/closed string duality of the would-be canonical string solution, which therefore does not exist. We suggest a noncanonical way-out based on topological string on noncommutative twistor space.

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