



Contribution ID: 45

Type: **not specified**

Susy Scattering amplitudes, Wilson loops and integrability.

Friday, 20 May 2016 11:30 (20 minutes)

The gluon scattering amplitudes and the null polygonal Wilson loops in planar Super Yang-Mills $N=4$ are believed to be the same. Many tests have been done at the perturbative level, while at strong coupling the scattering amplitudes can be computed solving a minimal area problem, thanks to the AdS/CFT correspondence.

As for the Wilson loops, a variant of the well-known Operator Product Expansion has been developed enabling us to write it as a sum over the excitations on the GKP vacuum. Thanks to the integrability underlying the theory, we have been obtaining many exact results in a series of papers, mainly on the strong coupling limit. Among them, the computation of the

Wilson loop is recast into a system of TBA-like equations, finding agreement with the classical string result.

In addition, a purely quantum

contribution of the same order of the classical one comes out of the blue by considering an ostensibly subdominant sector.

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Session Classification: Parallel 20 am