

NEW PERSPECTIVES IN CONFORMAL FIELD THEORY AND GRAVITY

HELMHOLTZ

26 - 29 September 2023 DESY Hamburg, Germany



Contribution ID: 288

Type: **not specified**

Twist noncommutative gauge theories

Wednesday 27 September 2023 14:54 (18 minutes)

Applying the Yang-Baxter (YB) deformations to the famously integrable $AdS_5 \times S^5$ string give rise to a variety of new integrable models. In the context of the AdS/CFT correspondence, these models are conjectured to be dual to gauge theories on various noncommutative spacetimes obtained via Drinfel'd twists. To date, however, it was unclear how to formulate such noncommutative gauge theories precisely beyond the simplest case of constant noncommutativity. In my talk, I will show how to construct gauge invariant noncommutative Yang-Mills actions for a broad class of noncommutative structures, relying on deformed version of the Hodge star operation. I will also show how to include matter fields and hence how to construct noncommutative versions of $\mathcal{N} = 4$ SYM which give promising candidates for the dual theory to YB deformations of the $AdS_5 \times S^5$ string. Finally, I will elaborate on how to relate between planar Feynman diagrams of the noncommutative theory and their commutative counterparts, as the first step towards calculating the planar one loop 2-point functions of gauge invariant operators in twist noncommutative SYM.

Summary

Primary author: MEIER, Tim (Humboldt-Universität zu Berlin)

Presenter: MEIER, Tim (Humboldt-Universität zu Berlin)

Session Classification: Parallel Session Wednesday: Strings / Mathematical Physics III

Track Classification: Strings & Mathematical Physics