Towards holographic higher-spin interactions

Dmitry Ponomarev

Ludwig Maximilian University
Theresienstrasse 37a, Munich
Germany
DPonomarev2002@yandex.ru

Joint work with: Xavier Bekaert, Johanna Erdmenger and Charlotte Sleight

The standard perturbative derivation of consistent interactions for higher spin gauge fields becomes tedious after the cubic level. We study the alternative approach based on holography. The simplest version of the holographic higher spin conjecture states that Vasiliev's higher spin gravity is dual to the free O(N) vector model. This implies that one can extract higher spin interactions by comparing bulk Witten diagrams with the associated conformal correlators. As the first step, we aim at the quartic coupling of scalar fields in the higher spin theory. I will review certain novel techniques facilitating this program. I will also report on preliminary results for the scalar quartic interaction vertex. These results provide a step towards the larger goal of the holographic reconstruction of bulk interactions, and of clarifying bulk locality.