Contribution ID: **552** Type: **Parallel session talk**

# On-Shell Action of Type IIB Superstrings on $AdS_5 \times S^5$

*Tuesday 22 August 2023 18:10 (20 minutes)*

The AdS/CFT correspondence is a powerful tool for studying quantum gravity and strongly coupled quantum field theories. One of its simplest predictions is that the on-shell action of type IIB supergravity on $AdS_5 \times S^5$ is a non-zero number fixed by the boundary data, despite being zero in the standard formulation of supergravity. This apparent paradox was recently resolved by Kurlyand and Tseytlin, who showed that one needs to add suitable boundary terms to the supergravity action to make it consistent with AdS/CFT. In this talk, I will revisit this issue from the perspective of Sen's formalism for type IIB supergravity, which incorporates the self-dual five-form field strength in a manifestly covariant way. I will demonstrate that Sen's formalism also naturally leads to a specific boundary term reproducing the AdS/CFT prediction. However, the boundary term in Sen's formalism, as I will argue, also can be viewed as a candidate for the complete boundary term of the entire type IIB string theory in $AdS_5 \times S^5$. This result can provide robust evidence for the strongest version of the AdS/CFT conjecture. This is also an interesting result since the general problem of constructing appropriate boundary terms for the spacetime actions of string theory is poorly understood.

## Collaboration / Activity

arXiv:2211.02345

**Primary author:** CHAKRABARTI, Subhroneel (Institute of Physics of the Czech Academy of Sciences)

**Co-authors:** Dr MANNA, Arkajyoti; Mr GUPTA, Divyanshu

**Presenter:** CHAKRABARTI, Subhroneel (Institute of Physics of the Czech Academy of Sciences)

**Session Classification:** T11 Quantum Field and String Theory

**Track Classification:** Quantum Field and String Theory