



Department of  
Theoretical Physics

# THE QUANTUM SPACETIME SEMINAR SERIES

**Off Shell Strings and Black Hole Entropy**

(Zoom Seminar)

**Aron Wall**

(DAMTP, Cambridge)

**Date:** September 4, 2023

**Time:** 3 PM IST

Zoom link shall be shared separately



In order to derive the classical string action from the worldsheet, it is necessary to take string theory off shell. This can be done by a prescription of Tseytlin, who proposed taking the worldsheet sphere QFT partition function and \*differentiating\* it with the log of the UV cutoff. I will explain why this strange prescription always gives the correct answers, for both the S-matrix and equations of motion, to all orders in perturbation theory. I will also compare the Susskind-Uglum off-shell method of calculating black hole entropy, to the more popular (but also more dubious) orbifold method. Based on work with Amr Ahmadain (arXiv:2211.08607 and arXiv:2211.16448).

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