



Contribution ID: 23

Type: **not specified**

Mellin Amplitudes for Energy Correlators

Wednesday, 17 December 2025 11:30 (45 minutes)

The N -point Energy Correlators (ENC) are locally finite observables in $N=4$ super Yang Mills theory. In the multi-collinear limit, these are Chen-iterated integrals over state-summed tree-level squared amplitudes. In this talk we establish mapping relations between $(N+1)$ -point dual conformal feynman loop integrals and ENC by introducing Mellin amplitudes for the latter, exploiting Symanzik star formula.

Given the Mellin amplitudes, we build differential equations relating the ENC to even-point one-loop feynman integrals in even dimension, unraveling its analytic structures bypassing integration by parts. Our study aims to predict the space of integrated functions from singularities present in the squared amplitudes, offering insights for a direct bootstrap program for event-shape observables in $N=4$ sYM and QCD.

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