TEP Seminar

UCLA

Tuesday, October 25 @ 4:00 PM
Physics & Astronomy Building (PAB) 4-330

Mellin space analytic bootstrap for O(N) models

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We apply the analytic conformal bootstrap ideas in Mellin space to conformal field theories with an O(N) symmetry. We focus on the generic four point Mellin amplitude of scalars in the fundamentals of O(N) in s, t, u channel and isolate the contribution which is inconsistent with the OPE. Demanding the cancellation of these OPE-offending terms gives constraints on the operator dimension and the OPE coefficient. We solve the constraint equations to compute the anomalous dimension and the OPE coefficients of scalar and higher spin exchange operators appearing in the singlet, symmetric traceless and antisymmetric sector of the O(N) representation in d=4-epsilon and the large N limit in general dimension. This allows us to reproduce the known results as well as obtain new results for O(N) models.