

Bootstrapping the $O(N)$ Vector Models

Thursday, 15 August 2013 14:10 (40 minutes)

We study the conformal bootstrap for 3D CFTs with $O(N)$ global symmetry. We obtain rigorous upper bounds on the scaling dimensions of the first $O(N)$ singlet and symmetric tensor operators appearing in the $\phi_i \times \phi_j$ OPE, where ϕ_i is a fundamental of $O(N)$. Comparing these bounds to previous determinations of critical exponents in the $O(N)$ vector models, we find strong numerical evidence that the $O(N)$ vector models saturate the bootstrap constraints at all values of N . We also compute general lower bounds on the central charge, giving numerical predictions for the values realized in the $O(N)$ vector models. We compare our predictions to previous computations in the $1/N$ expansion, finding precise agreement at large values of N .

Presenter: Dr SIMMONS-DUFFIN, David

Session Classification: Field and String Theory