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Casimir effect in critical O(N) models with non-equilibrium methods

Lattice systems, when tuned to criticality, exhibit long-range fluctuations that are sensitive to the geometry in which they are confined. The critical Casimir amplitude encodes universal information on this behavior, and it is part of the CFT data at finite temperature. Predicting this quantity in models with O(N) symmetry would have a broad range of applications, from high-energy physics to condensed matter, but so far different calculations have yielded conflicting results. Using a new numerical technique, we push the theoretical predictions to a range of parameters never studied before, revealing a non-trivial dependence on the number of spin components, N, and comparing our results to bootstrap calculations.

Authors: NADA, Alessando; BULGARELLI, Andrea (University of Turin and INFN Turin); PANERO, Marco; CASELLE, Michele

Presenter: BULGARELLI, Andrea (University of Turin and INFN Turin)