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Studying dynamics with conformal truncation

I will present a new nonperturbative framework for computing spectra and dynamical correlation functions in QFTs arising from CFTs perturbed by one or more relevant operators. The framework combines Hamiltonian truncation—numerical diagonalization of a finite sub-matrix of the full Hamiltonian—with tools from CFTs and intuition from holography. The basic strategy, which I will describe in detail, is to express the Hamiltonian in a basis consisting of eigenstates of the UV conformal Casimir, and to truncate in the Casimir eigenvalue. As proof-of-principle illustrations of the method, I will consider controlled examples in the context of 3d scalar field theory where one can compare with known analytic results.