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A linked cluster expansion for the Functional Renormalization Group of the Legendre effective action.

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A lattice version of the widely used Functional Renormalization Group (FRG) for the Legendre effective action is solved (exactly) in terms of a linked cluster expansion. The graph rules invoke only one-line irreducible and a new type of labeled tree graphs. Conversely, the FRG induces nonlinear flow equations governing suitable resummations of the graph expansion. The correspondence is tested on the critical line of the Luscher-Weisz solution of the phi^4 theory. An extension to QFTs on curved spacetimes with flat spatial sections is feasible.

Primary author: Mr BANERJEE, Rudrajit (Department of Physics and Astronomy, University of Pittsburgh)

Co-author: Dr NIEDERMAIER, Max (Department of Physics and Astronomy, University of Pittsburgh)

Presenter: Mr BANERJEE, Rudrajit (Department of Physics and Astronomy, University of Pittsburgh)

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