

Search of scaling solutions in scalar-tensor gravity

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We write new functional renormalization group equations for a scalar nonminimally coupled to gravity. Thanks to the choice of the parametrization and of the gauge fixing they are simpler than older equations and avoid some of the difficulties that were previously present. In three dimensions these equations admit, at least for sufficiently small fields, a solution that may be interpreted as a gravitationally dressed Wilson-Fisher fixed point. We also find for any dimension $d > 2$ two analytic scaling solutions which we study for $d=3$ and $d=4$. One of them corresponds to the fixed point of the Einstein-Hilbert truncation, the others involve a nonvanishing minimal coupling.

Presenter: PERCACCI, Roberto