Stable homogeneous Einstein metrics

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Given a compact differentiable manifold M, the critical points of the total scalar curvature functional Sc on the space of all unit volume Riemannian metrics on M are precisely Einstein metrics. Among Einstein metrics with positive scalar curvature, those which are stable as critical points of Sc (i.e., negative definite Hessian) on the subspace of all constant scalar curvature metrics, and in particular isolated local maxima, seems to be extremely rare.

In this talk, after some general preliminaries, we will focus on the case when the metrics and the variations are G-invariant for some compact Lie group G acting transitively on M. We obtain that many standard (i.e., defined by minus the Killing form of G) Einstein metrics are G-stable; these metrics have recently been proved to be the first known examples of non-symmetric stable Einstein metrics by Paul Schwahn.

This is joint work with Emilio Lauret (Universidad Nacional del Sur and INMABB (CONICET), Argentina) and Cynthia Will (Universidad Nacional de Córdoba and CIEM (CONICET), Argentina).