Seminario de Geometría y Topología

UNIVERSIDAD COMPLUTENSE MADRID

Lorentzian Einstein metrics with prescribed conformal infinity

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Abstract: I will discuss geometric aspects of the existence of Lorentzian Einstein metrics with prescribed conformal infinity. More precisely we show that, given any suitably small perturbation h of the conformal metric of the (n + 1)-dimensional anti-de Sitter space at timelike infinity, which is given by the canonical Lorentzian metric on the n-dimensional cylinder, there is a Lorentzian Einstein metric whose conformal geometry is given by h. This is a Lorentzian counterpart of the Graham–Lee theorem in Riemannian geometry, which allows us to "tickle" hyperbolic space at infinity and still obtain an Einstein manifold. Further motivation comes from the holographic prescription problem in the context of the AdS/CFT correspondence in string theory. Connections with the classical local well-posedness theorem for the Lorentzian Einstein equation of Choquet-Bruhat and with the conjectural instability of anti-de Sitter space will be discussed too. The talk is based on joint work with N. Kamran.

Lugar: Universidad Complutense de Madrid
Facultad de Ciencias Matemáticas
Departamento de Geometría y Topología, Sala 225
Fecha y Hora: Martes, 3 de febrero de 2015, 12:00

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