

Compactness of asymptotically hyperbolic Einstein 4-manifolds

Yuxin Ge

University of toulouse 3

Abstract

Let X^4 be a differential 4-manifold with the boundary $M^3 = \partial X^4$. Given a conformal class $(M, [h])$ of riemannian metric h on M , we try to find "conformal filling in" a asymptotically hyperbolic Einstein g_+ on X such that $r^2 g_+|_M = h$ for some defining function r on X . The study of complete AH Einstein manifolds has become very active due to the AdS/CFT correspondence in string theory.

In this talk, instead of addressing the existence problem of a conformal filling in, we discuss the compactness problem, that is, how the compactness of the sequence of conformal infinity metrics leads to the compactness result of the compactified filling in AHE manifolds under the suitable assumptions on the topology of X and some conformal invariants. We briefly survey some known results then report recent joint work in progress with Alice Chang. Some applications will be discussed.