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Title: The Space of Metrics Positive Intermediate Scalar Curvature

Abstract:

Many of the central questions in modern geometry concern the relationship between curvature and topology. These questions often take the following form: given a manifold M and a curvature condition C, can we find a Riemannian metric on M which satisfies C? For example, does a given manifold, M, admit a Riemannian metric whose scalar curvature is everywhere positive? Or can we find Riemannian metrics on M whose sectional curvature is everywhere non-negative? Moreover, given the existence of metrics on M which satisfy C, one may further enquire about the topology of the space of all such metrics on M. Understanding such spaces is now a vibrant area of research.

The scalar and sectional curvatures are respectively the weakest and strongest curvature notions one may consider. Thus, far more success has been achieved in tackling these problems where the curvature condition C concerns the scalar curvature rather than the sectional. In this talk we consider a collection of curvatures, the so-called Intermediate Scalar Curvatures, which interpolate between the scalar and the sectional. I will discuss the progress that has been made in extending theorems which hold for the scalar curvature over some of these intermediate curvatures. I will also share some recent new results which are joint with M. Burkemper and C. Searle.