Equilibrium states for geodesic flow in non-positive curvature

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The geodesic flow on a negatively curved manifold is one of the classical examples of a uniformly hyperbolic (transitive Anosov) system; in particular, it has a unique measure of maximal entropy, and more generally, unique equilibrium states for Holder continuous potentials. When curvature is only assumed to be non-positive, the geodesic flow becomes non-uniformly hyperbolic and much less is known. For a rank 1 manifold of non-positive curvature, Knieper showed uniqueness of the measure of maximal entropy, but his methods do not generalize to equilibrium states for non-zero potentials.

I will discuss joint work with Keith Burns, Todd Fisher, and Daniel J. Thompson, in which we use a nonuniform version of Bowen's specification property to establish existence and uniqueness of equilibrium states for a class of non-zero potential functions. This class includes scalar multiples of the geometric potential for an interval of parameter values.