The space of negatively-curved metrics on a closed manifold

Tom Farrell

Abstract: This talk will be a report on recent joint work with Pedro Ontaneda where we show that the space of Riemannian metrics with negative sectional curvatures on a closed smooth manifold $\mathcal{M}$ of dimension > 9 is disconnected (in fact has infinitely many path components). We also show that for certain $\mathcal{M}$ (sufficiently large finite covers of manifolds supporting nonarithmetic hyperbolic metrics) the moduli space of such metrics is also disconnected. And we have some non-vanishing results about the higher homotopy (homology) groups of these spaces. Finally we apply these results to study bundles whose fibers are diffeomorphic to $\mathcal{M}$ and each fiber supports a negatively curved Riemannian metric.