JOINT DIFFERENTIAL GEOMETRY/PDE & RAINWATER SEMINAR

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PADELFORD C-36
3:50 PM

(Non)regularity of projections of measures invariant under geodesic flow

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We show that, unlike in the 2-dimensional case, the Hausdorff dimension of a measure invariant under the geodesic flow is not necessarily preserved under the projection from the unit tangent bundle onto the base manifold if the base manifold is at least 3-dimensional. In the 2-dimensional case we reprove the preservation theorem due to Ledrappier and Lindenstrauss using the general projection formalism of Peres and Schlag. The novelty of our proof is that it illustrates the reason behind the failure of the preservation in higher dimensional case. Finally, we show that the projected measure has fractional derivatives of order γ for all $\gamma < (\alpha - 2)/2$ provided that the invariant measure has finite α-energy for some $\alpha > 2$ and the base manifold has dimension 2.

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