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Sergio Fenley* (fenley@math.su.edu), Tallahassee, FL 32306-4510. *What can a flow say about the asymptotic or large scale structure of a manifold?*

Pseudo-Anosov flows are extremely common amongst 3-manifolds and they are intimately related to the topology. We show they are also strongly connected with the asymptotic structure of the universal cover U of M and the large scale geometry of U . Given a pseudo-Anosov flow, the lift to the universal cover has orbit space which is homeomorphic to a plane. It turns out one can always compactify the orbit space with an ideal circle so that the union is a closed disk. With an additional (and very common) condition on the flow, we can show that the ideal circle of the flow has a quotient R which is an ideal boundary of U and produces a compactification of U . The quotient R is a 2 sphere and the fundamental group G of M acts in this sphere. The action in R has excellent properties: it is a uniform convergence action. A result of Bowditch implies that the fundamental group G is Gromov hyperbolic, R is homeomorphic to the ideal boundary of G and the action in R is conjugate to the action of G in its boundary. In this way the large scale geometric properties of the group and the universal cover are completely described using only the dynamics of the pseudo-Anosov flow in this situation. There are consequences for metric properties of flows and foliations. (Received March 02, 2006)