1096-53-2136 **Craig J. Sutton*** (craig.j.sutton@dartmouth.edu), Dartmouth College, Hanover, NH 03755.

On the Poisson relation for compact symmetric spaces. Preliminary report.

Motivated in part by considerations from quantum mechanics, it is a long-standing folk-conjecture that the spectrum of a manifold (i.e., the sequence of eigenvalues of the associated Laplace operator) determines its length spectrum (i.e., the set consisting of the lengths of closed orbits of the associated geodesic flow). This conjecture is known to be true for generic (i.e., sufficiently "bumpy") manifolds; however, our understanding in the homogeneous setting—where closed geodesics come in large families—is rather incomplete. In this talk we will use wave trace techniques to explore the validity of this conjecture in the case of compact irreducible symmetric spaces, which serve as a large and natural class of standard model spaces in geometry. In particular, we will confirm the conjecture for classical Lie groups equipped with a bi-invariant metric by showing that the Poisson relation is an equality. That is, we will use the trace formula of Duistermaat and Guillemin to show that for such manifolds the singular support of the trace of the associated wave group is equal to the length spectrum. (Received September 17, 2013)