962-58-1223 **Mark S. Ashbaugh*** (mark@math.missouri.edu), Department of Mathematics, University of Missouri, Columbia, MO 65211-0001. *Universal Eigenvalue Inequalities for Domains in Spaces of Constant Curvature.* Preliminary report.

In 1955 and 1956, Payne, Polya, and Weinberger presented universal inequalities for the eigenvalues of the Dirichlet Laplacian on bounded domains in Euclidean space. These bounds are "universal" in the sense that they hold for an essentially arbitrary domain, with not even geometric data (aside from the dimension of space, n) needing to be supplied. The inequalities take the form of upper bounds for the gap between consecutive eigenvalues in terms of lower eigenvalues. Over the years the original bounds of Payne, Polya, and Weinberger (PPW) have been improved and refined by various authors, most notably by Hile and Protter (1980) and by H.C.Yang (1991 preprint, 1995 revision). Beginning with S.-Y. Cheng (1975) various extensions of these bounds to domains in certain Riemannian manifolds, and in particular spaces of constant curvature, have been made. In this talk, new and relatively sharp results extending the inequalities of PPW, Hile-Protter, and Yang to the eigenvalues of bounded domains in the standard spaces of constant curvature, and certain other Riemannian manifolds, will be presented. These improve upon previous results of Cheng, Yang and Yau, Li, Leung, Harrell, Harrell and Michel, and others. Of particular note are the new bounds for domains in hyperbolic space H^n. (Received October 02, 2000)