1057-35-427 **Mark S. Ashbaugh*** (ashbaughm@missouri.edu), Department of Mathematics, University of Missouri, Columbia, MO 65211-4100. *The Buckling Problem and the Krein Laplacian.*

Recent developments on the buckling problem and the Krein Laplacian in which the author has been involved will be discussed, including connections between these two problems, analysis of their spectral asymptotics, and inequalities for their eigenvalues. In particular, we note that the buckling problem is intimately related to the Krein Laplacian, and that, in fact, there is a unitary equivalence between the two problems if one considers the Krein Laplacian on the space orthogonal to its kernel. Old conjectures concerning the eigenvalues of the buckling problem will also be discussed, including the Polya-Szego conjecture for the first eigenvalue (which would be the Faber-Krahn result for this problem) and Payne's conjecture comparing the buckling eigenvalues to those of the Dirichlet Laplacian on the same domain.

Much of the recent work presented in the talk represents joint work with Fritz Gesztesy, Marius Mitrea, Roman Shterenberg, and/or Gerald Teschl. (Received January 26, 2010)