

TEMPLE UNIVERSITY
Department of Mathematics

Analysis Seminar

Room 617 Wachman Hall

Monday, September 15, 2014, 2:40 p.m.

*Eigenspace decomposition of the kernel of
 \mathbb{R} -invariant operators*

by G. Mendoza

Department of Mathematics
Temple University

Let \mathcal{T} be a smooth nowhere vanishing vector field on a closed manifold M and P a second order differential operator on M commuting with P and such that $P - \mathcal{T}^2$ is elliptic. Then \mathcal{T} can be viewed as acting as an unbounded operator on the kernel of P in L^2 , giving as such (under certain circumstances), a selfadjoint operator with discrete spectrum. Further, assuming regularity properties for the solutions u of $Pu = f$ in terms of those of f , one obtains results about whether the spectrum of \mathcal{T} (a subset of \mathbb{R}) is bounded from below (or from above). I will explain how one proves these results and then describe interesting applications in complex and CR geometry.