

1138-35-64

Giles Auchmuty*, auchmuty@uh.edu. *Variational Methods for Constructing Bases of Hilbert Subspaces.*

This talk will describe the use of variational methods to construct orthogonal bases of certain real Hilbert Sobolev spaces. These bases are constructed using a sequence of variational principles for eigenvalues of bilinear forms. The associated minimizers will be eigenfunctions of non-standard eigenproblems. The primary question is what subspaces are spanned by the eigenfunctions and are they maximal orthogonal subsets?

The results will be illustrated by the construction of Steklov eigenfunctions for the biharmonic operator and the SVD of the Poisson kernel for Laplace's equation. (Received January 27, 2018)