THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

M. E. Taylor Analysis and PDE Seminar

February 7th
3:30 - 4:30 p.m.
Phillips Hall 385

Eigenvalue Optimization and Minimal Surfaces

Peter McGrath (NCSU)

Abstract. I will discuss a new method, developed in collaboration with M. Karpukhin, R. Kusner, and D. Stern, for constructing minimal surfaces embedded in the 3-sphere and the 3-ball, by equivariant eigenvalue optimization. A main application is that each topological type of compact oriented surface is realized as a minimal surface with free boundary in the 3-ball, resolving a question of Fraser-Li. More generally, we prove the number of such surfaces with a given genus and number of boundary components grows linearly with the genus, provided the number of boundary components is at least two.