

AILANA FRASER
(UBC)

Minimal surfaces in the ball and a compactness result

In recent joint work with R. Schoen we proved existence of properly embedded minimal surfaces of genus 0 with any number of boundary components in the Euclidean ball, meeting the boundary of the ball orthogonally. Such minimal surfaces are referred to as *free boundary* surfaces, since they arise variationally as critical points of the area among surfaces in the ball whose boundaries lie on ∂B but are free to vary on ∂B . There is a close connection between these surfaces and extremal surfaces for the Steklov eigenvalue problem. I will start by giving an overview of these results. I will then discuss joint work with Martin Li on a lower bound for the first Steklov eigenvalue of embedded minimal hypersurfaces with free boundary in compact n -manifolds with non-negative scalar curvature and convex boundary. When $n = 3$, an important consequence of the estimate is that the space of embedded free boundary minimal surfaces of fixed topological type is compact in the smooth topology.