

Matthew Hedden

Title: Relative Thom conjectures

Abstract: Gauge theory excels at solving minimal genus problems for 3- and 4-manifolds. A notable triumph is its resolution of the Thom conjecture, asserting that the genus of a smooth complex curve in the complex projective plane is no larger than any smooth submanifold homologous to it. Gauge theoretic techniques have also been used to verify analogous conjectures for Kähler surfaces or, more generally, symplectic 4-manifolds. One can formulate versions of these conjectures for surfaces with boundary lying in a 3-manifold, and I'll discuss work in progress with Katherine Raoux which attempts to extend these "relative" Thom conjectures outside the complex (or even symplectic) realm using tools from Floer homology.