Title: Morse Theory for the H-surface Equation.

Abstract: Given a bounded smooth domain $\Omega \subset \mathbf{R^2}$, we consider the conformally invariant equation $\Delta v = 2v_x \wedge v_y$ in Ω, where $v : \Omega \to \mathbf{R^3}$. We prescribe Dirichlet boundary datum and consider the case when the datum converges to zero. The corresponding Euler functional for this problem exhibits lack of compactness and fails to satisfy the Palais-Smale condition due to the conformal invariance. Thus bubbling phenomena arises. We analyse multiple bubbling and study the location of the bubbles. This information allows us to settle a case of a question of Brezis and Coron. We also point out the connection between our equation and the so-called Yang-Mills equation.