DIFFERENTIAL GEOMETRY/PDE SEMINAR

Wednesday, March 10
Communications 326
3:45 pm

Some New Harmonic Maps from the 3-ball to the 2-sphere

Robert Hardt
(Rice)

A smooth map g from the 2-sphere to itself of degree 0 admits a smooth extension u mapping the closed 3-ball to the 2-sphere. It is still unknown whether there exists a smooth extension u that is also harmonic. The problem of minimizing energy among smooth maps leads to a variational problem (previously studied by Bethuel-Brezis-Coron, Giaquinta-Modica-Soucek, Hardt-Lin-Poon, and Riviere) involving a different "relaxed" energy, whose critical points are also harmonic. With H. Farag, we discuss these theories in a restricted class of maps that commute with rotation about an axis. We in particular obtain some new singular and smooth harmonic maps.