Low energy levels of harmonic maps into analytic manifolds

Melanie RUPFLIN

University of Oxford, UK

We consider the energy levels of harmonic maps from the sphere into a closed Riemannian manifold N. While a well known conjecture of L. Simon asserts that the energy spectrum is discrete whenever N is analytic, for most analytic targets it is only known that any potential accumulation point of the energy spectrum must be given by the sum of the energies of at least two harmonic spheres.

The lowest energy level that could hence potentially be an accumulation point is thus twice the minimal energy of a harmonic sphere. In this talk we discuss how we can exclude this possibility for generic 3 manifolds and discuss additional results that establish obstructions to the gluing of harmonic spheres and Lojasiewicz-estimates for almost harmonic maps in singular settings.