
ALMOST HARMONIC MAPS FROM HIGHER GENUS SURFACES

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For geometric variational problems one often only has weak, rather than strong, compactness results and hence has to deal with the problem that sequences of (almost) critical points u_j can converge to a limiting object with different topology.

A major challenge posed by such singular behaviour is that the seminal results of Simon on Lojasiewicz inequalities, which are one of the most powerful tools in the analysis of the energy spectrum of analytic energies and the corresponding gradient flows, are not applicable. In this talk we present a method that allows us to prove Lojasiewicz inequalities in the singular setting of almost harmonic maps that converge to a simple bubble tree and explain how these results allow us to draw new conclusions about the energy spectrum of harmonic maps and the convergence of harmonic map flow for low energy maps from surfaces of positive genus into general analytic manifolds.