

Bouncing Jacobi Fields and the Allen-Cahn equation on surfaces

There is a strong parallel between the theory of minimal hypersurfaces and the solutions of the double-well phase transition Allen-Cahn equation on a manifold. In this talk, I will report some recent result on the relations between geodesics on surfaces and solutions of the Allen-Cahn equation with uniform bounds on the Morse Index and energy, as the phase transition parameter tends to 0. Our results show that the situation in 2-dimensions is strikingly different from the situation in dimension 3 and higher. This is a joint work with Juncheng Wei and Yong Liu.

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