

# Geometric min-max methods and the space of solutions to the Allen-Cahn equation on closed manifolds

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## **Abstract:**

The energy functional for phase transitions behaves as a desingularization of the area functional for hypersurfaces. This connection, pointed out by De Giorgi in the late 70s, have been exploited in many directions ever since. In this talk I will explain how recent techniques used to study the space of minimal hypersurfaces from a global variational point of view, give also a better understanding of the space of solutions to the Allen-Cahn on a closed manifold (e.g. existence of solutions, non-trivial solutions with least energy, sublinear energy estimates).