Mathematical analysis of variational models related to phase transformations in plasticity

Florian Gammer (University of Regensburg)

We consider a generalized double-well problem depending on several parameters, and our goal is to determine its symmetric quasiconvex envelope in two dimensions. In this talk, we first introduce a model for phase transformations in solids that motivates our relaxation problem. Secondly, we determine the convex envelope of this double-well problem in order to develop certain techniques and to motivate the procedure for the more abstract convexity notions. We explain these notions of convexity with an emphasis on symmetric polyconvexity. Finally, we show how to calculate the symmetric polyconvex envelope in two dimensions via multilinear Legendre conjugation.