Microstructures and nonlinear elliptic PDEs

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Abstract

This talk will present the following counterexamples to regularity for systems of elliptic PDEs: there exist Lipschitz but nowhere C1 weak solutions to certain elliptic systems arising as the Euler-Lagrange equations of stored energy functionals in nonlinear elasticity. The aim of the talk is to show how these examples are motivated by the mathematical analysis of microstructures and how they are linked to the geometry of matrix space, in particular to rank-1 convexity.