Abstract

To study existence and regularity of solutions of some standard variational models in nonlinear elasticity, it is convenient to know whether it is possible to approximate homeomorphisms $u$ with diffeomorphisms $u_n$ whose elastic energy is close to the one of $u$. A big step in this direction would be to show the existence of an approximating sequence $(u_n)_n$ such that $u_n$ converges to $u$ and, at the same time, $u_n^{-1}$ converges $u^{-1}$ in a suitable sense. We briefly introduce hyperelasticity and the class of admissible deformations for the pure-displacement boundary problem, then we discuss the approximation of planar homeomorphisms in the spaces bi-Sobolev and $BV$. This is a joint work with Aldo Pratelli (FAU Erlangen-Nürnberg).