COMPUTATIONAL POLYCONVEXIFICATION OF ISOTROPIC FUNCTIONS

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Abstract. Based on the characterization of the polyconvex envelope of isotropic functions by their signed singular value representations, we propose a simple algorithm for the numerical approximation of the polyconvex envelope. Instead of operating on the dxd-dimensional space of matrices, the algorithm requires only the computation of the convex envelope of a function on a d-dimensional manifold, which is easily realized by standard methods. The significant speedup associated with the dimension reduction from dxd to d is demonstrated in a series of numerical experiments

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