

A new concept of semistrict quasiconvexity for vector functions

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Abstract

The aim of this talk is to present a new concept of semistrict quasiconvexity for vector functions defined on a nonempty, convex set from some real linear space X taking values in a real topological linear space Y , partially ordered by a proper, solid, convex cone C .

The so-called semistrict C -quasiconvexity recovers the classical concept of semistrict quasiconvexity of scalar functions when $Y = \mathbb{R}$ and $C = \mathbb{R}_+$. Moreover, similarly to the scalar case, whenever C is closed, a vector function is both semistrictly C -quasiconvex and C -quasiconvex if and only if it is explicitly C -quasiconvex. We characterize semistrict/explicit C -quasiconvexity of vector functions in terms of classical semistrict/explicit quasiconvexity of certain real-valued functions, defined by composing the vector-valued function with the nonlinear scalarization function introduced by Gerstewitz (Tammer) in 1983.

This talk is based on joint works with Nicolae Popovici.