Semistrictly quasiconvex vector-valued functions

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21.10.2021

Abstract

We introduce a new concept of semistrict quasiconvexity for vector functions defined on a nonempty convex set from some real linear space X that take values in a real topological linear space Y, partially ordered by a proper solid convex cone C. Similarly to the scalar case, when C is closed, a vector function is both semistrictly C-quasiconvex and C-quasiconvex (in the sense of Luc, 1989) if and only if it is explicitly C-quasiconvex (in the sense of Popovici, 2007).

We present characterizations of semistrictly/explicitly C-quasiconvex functions by means of linear transformations and the nonlinear scalarization functions introduced by Gerstewitz (Tammer) in 1983.

This talk is based on a joint work with Christian Günther (Martin Luther University, Halle-Wittenberg, Germany).