Section 09: Partial Differential Equations | Poster number 530

Stability of $W^{l,\infty}$-Solutions to Partial Differential Relations and Quasiconvex Sets

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ABSTRACT

We continue studying the classes $\mathfrak{G}$ of $W^l_{\infty,\mathrm{loc}}$-solutions to partial differential relations $g^{(l)}(x) \in K$ a.e. which was initiated in the articles [1–5] devoted to investigating stability in the C-norm of classes of locally Lipschitz continuous solutions to first order ($l = 1$) partial differential relations. Here $g^{(l)}(x)$ stands for the differential of order l of a mapping g at $x \in \mathbb{R}^n$ and K is a set in the space E^m_l of symmetric l-linear maps from $\mathbb{R}^n$ into $\mathbb{R}^m$.

A set K in E^m_l is called *quasiconvex* if $K = \{e \in E^m_l,\ \mathrm{dist}^{qc}_K(e) = 0\}$. Here for a function $F : E^m_l \to \mathbb{R}$ F^{qc} denote its quasiconvex envelop [6].

Using the properties of quasiconvex sets we study the stability problem for the classes $\mathfrak{G}$ with respect to the C^{l-1}-norm, $l = 1, 2, \ldots$.

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