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Original Articles

Existence Theorems for Periodic Differential Inclusions in I\!R$^{\hbox{^{N}}}$

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摘要 We study the periodic problem for differential inclusions in $\ssize \Bbb{R}^N$. First we look for extremal periodic solutions. Using techniques from multivalued analysis and a fixed point argument we establish an existence theorem under some general hypotheses. We also consider the ``nonconvex periodic problem" under lower semicontinuity hypotheses, and the ``convex periodic problem" under general upper semicontinuity hypotheses on the multivalued vector field. For both problems, we prove existence theorems under very general hypotheses. Our approach extends existing results in the literature and appear to be the most general results on the nonconvex periodic problem.

关键词 Differential inclusion, multifunction, upper and lower semicontinuity, extremal periodic solution, Schauder fixed point theorem, property $\ssize {\mathcal{U}}$, weak norm, Hartman condition

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Abstract

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