An Indirect Method of Nonconvex Variational Problems in Asplund Spaces: The Case for Saturated Measure Spaces*

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Abstract

The purpose of this paper is to establish an existence result for nonconvex variational problems with Bochner integral constraints in separable Asplund spaces via the Euler–Lagrange inclusion, under the saturation hypothesis on measure spaces, which makes the Lyapunov convexity theorem valid in Banach spaces. The approach is based on the indirect method of the calculus of variations.

Key Words: indirect method, nonconvex variational problem, saturated measure space, Lyapunov convexity theorem, Asplund space, Euler–Lagrange inclusion.

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