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Variational approach to impulsive differential equations. (English) Zbl 1167.34318
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Summary: Many dynamical systems have an impulsive dynamical behavior due to abrupt changes at certain instants during the evolution process. The mathematical description of these phenomena leads to impulsive differential equations. In this work we present a new approach via variational methods and critical point theory to obtain the existence of solutions to impulsive problems. We consider a linear Dirichlet problem and the solutions are found as critical points of a functional. We also study the nonlinear Dirichlet impulsive problem.

MSC:

34B37 Boundary value problems with impulses for ordinary differential equations
47J30 Variational methods involving nonlinear operators

Cited in **2** Reviews
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Keywords:

impulsive ordinary differential equations; Lax-milgram theorem; critical points; mountain pass theorem; Dirichlet boundary conditions

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