Impulsive coupled systems with functional boundary conditions

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Abstract

In this paper we consider a first-order coupled impulsive system of equations with functional boundary conditions, subject to the generalized impulsive effects. It is pointed out that this problem generalizes the classical boundary assumptions, allowing two-point or multipoint conditions, nonlocal and integro-differential ones or global arguments, as maxima or minima, among others. Our method is based on lower and upper solutions technique together with the fixed point theory.

The main theorem is applied to a SIRS model where, to the best of our knowledge, for the first time it includes impulsive effects combined with global, local, and the asymptotic behavior of the unknown functions.

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