

## ASYMPTOTIC INTEGRATION OF IMPULSIVE DIFFERENTIAL EQUATIONS VIA PRINCIPAL AND NONPRINCIPAL SOLUTIONS

ABSTRACT. The asymptotic integration problem for second-order ordinary differential equations is a classical research topic in mathematics. It has been widely investigated by many authors for the last several decades. It turns out that the asymptotic integration of impulsive differential equations is in its early stages. Among many difficulties are: (i) one cannot employ the techniques of asymptotic integration theory available for ordinary differential equations due to difficulties caused by impulsive perturbations, and (ii) the solutions of linear homogeneous equations even in the simplest case cannot be calculated in a closed form to figure out principal and nonprincipal solutions. In this work we obtain we study the asymptotic integration problem for a class of second order nonlinear impulsive differential equations. Our technique is different than the traditional ones as it is based on the principal and nonprincipal solutions. Moreover, the results may be applied to the existence and uniqueness of solutions of boundary value problems on half-line for a class of nonlinear impulsive differential equations. Examples are provided to illustrate the relevance of the results.

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