

ABSTRACT

STURM COMPARISON THEORY FOR IMPULSIVE DIFFERENTIAL EQUATIONS

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In this thesis, we investigate Sturmian comparison theory and oscillation for second order impulsive differential equations with fixed moments of impulse actions. It is shown that impulse actions may greatly alter the oscillation behavior of solutions.

In chapter two, besides Sturmian type comparison results, we give Leightonian type comparison theorems and obtain Wirtinger type inequalities for linear, half-linear and non-selfadjoint equations. We present analogous results for forced super linear and super half-linear equations with damping.

In chapter three, we derive sufficient conditions for oscillation of nonlinear equations. Integral averaging, function averaging techniques as well as interval criteria for oscillation are discussed. Oscillation criteria for solutions of impulsive Hill's equation with damping and forced linear equations with damping are established.

Keywords: Sturm, Leighton, Wirtinger, Damping, Hill's Equation, Impulse.