STURMIAN COMPARISON METHOD: THE VERSION FOR FIRST ORDER NEUTRAL DIFFERENTIAL EQUATIONS

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Abstract. In this paper the Sturmian Comparison Method is developed for the first order neutral differential equation of the type

\[ l(y) := [y(t + 1) - P(t)y(t)]' + Q(t)y(t + 1 - \sigma) = 0, \quad \sigma \geq 0. \] (1)

Using this method, a general theorem is proved on the location of zeros of (1), which is then applied to obtain two concrete results. The first one of them turns out to be the best possible in the case where \( P \) and \( Q \) are constants. The second one is concerned, for the first time, with the oscillation theory of first order neutral differential equations, in the case where the coefficient \( Q(t) \) is oscillatory.

Key words and phrases: Oscillation properties, neutral equations, location of zeros.

REFERENCES