

Almost-Periodic Solutions in Various Metrics of Higher-Order Differential Equations with a Nonlinear Restoring Term

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Abstract

Almost-periodic solutions in various metrics (Stepanov, Weyl, Besicovitch) of higher-order differential equations with a nonlinear Lipschitz-continuous restoring term are investigated. The main emphasis is focused on a Lipschitz constant which is the same as for uniformly almost-periodic solutions treated in [A1] and much better than those from our investigations for differential systems in [A2], [A3], [AB], [ABL], [AK]. The upper estimates of ε for ε -almost-periods of solutions and their derivatives are also deduced under various restrictions imposed on the constant coefficients of the linear differential operator on the left-hand side of the given equation. Besides the existence, uniqueness and localization of almost-periodic solutions and their derivatives are established.

Key words: Almost-periodic solutions; various metrics; higher-order differential equation; nonlinear restoring term; existence and uniqueness criteria.

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