

STABILITY OF LINEAR DELAY DIFFERENTIAL EQUATIONS ARISING IN MODELS OF LIVING SYSTEMS

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We present the results of our study of the stability of the trivial solution to a system of linear delay differential equations decomposable into two subsystems. Each of the subsystems contains matrices of a special form. We establish conditions for the asymptotic stability and nonstability of the trivial solution on the basis of the properties of stable matrices and nondegenerate M -matrices. The stability of equilibria for mathematical models in immunology and epidemiology is investigated.

Key words and phrases: system of linear delay differential equations, stability of the trivial solution, nonnegative matrix, stable matrix, M -matrix, Ważewski system of equations, mathematical models in immunology and epidemiology.

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