A New Approach for Construction of the Matrix-Valued Liapunov Functionals

A.A. Martynyuk * and V.I. Slyn'ko

*Stability of Processes Departament,
S.P. Timoshenko Institute of Mechanics,
Nesterov str.3, 03057, Kiev-57, Ukraine*

Abstract: In this paper we analyze the stability of large-scale functional differential equations with constant delays via matrix-valued functionals of Liapunov-Krasovskii. We establish a new approach for construction of the Liapunov-Krasovskii functional and present conditions which guarantee the uniform asymptotic stability of the trivial solution of linear and quasi-linear functional differential equations.

Keywords: *Functional differential equations; Liapunov's functional; uniform asymptotic stability; oscillator with delay.*

Mathematics Subject Classification (2000): 34K20, 34K06, 34D20, 93D30.