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Section:

9. Ordinary Differential Equations and Dynamical Systems

1991 MS Classification: 34, 35, 93

Zaitsev, Iuri

Lyapunov- type vector-function for nonlinear dynamic system

Tchetaev N. G. has proven the theorem about the instability of solutions of ordinary differential equations. In this work Tchetaev's ideas are extended for constructing Lyapunov-type vector-functions using higher order derivations of the function in the force of the system. These functions already possessed weaker properties in part of the region. A computer program was developed to verify the sign of the vector-function. Examples were constructed. Some theorems were generalized for partial differential equations to the instability with respect to the measure.

Reference: Tchetaev N. G. "Stability of motion" - Moscow, (1965), 33-35.