

DIFFERENTIABILITY PROPERTIES OF CONE-CONVEX VECTOR-VALUED FUNCTIONS

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In this talk we present some recent results on directional and Gateaux differentiability of cone-convex and cone-paraconvex vector-valued functions.

ON THE APPROXIMATION OF SYSTEMS WITH DELAY AND THEIR STABILITY

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Introduction. Location of the roots of the corresponding quasipolynomials plays an important role in the investigation of stability differential equations with delay. Unfortunately, we still have no effective algorithm for finding zeros of quasipolynomials.

In the present paper, we consider applications of the approximation schemes for differential-difference equations to approximate finding nonasymptotic roots of quasipolynomials, and analysis of stability for solutions of system of linear differential equations with delay.

1. Approximation schemes. Considered a linear system of differential equations with many delays

$$\frac{dx(t)}{dt} = \sum_{i=0}^k A_i x(t - \tau_i), \quad (1)$$

where $x \in \mathbb{R}^n$, A_i , $i = \overline{1, k}$, $-n \times n$ are constant matrices, $0 = \tau_0 < \tau_1 < \dots < \tau_k = \tau$.

The quasipolynomial for system (1) is of the form

$$\Phi(\lambda) = \det(\lambda E - \sum_{i=1}^k A_i e^{-\lambda \tau_i}). \quad (2)$$