

Oscillatory and Nonoscillatory Behavior of a Differential Delay System of Order n

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The aim of this work is to study of the oscillatory behavior of a delay differential equation of type

$$x^{(n)}(t) = \sum_{k=1}^n A_k x^{(n-k)}(t - \tau_k), \quad t \geq 0 \quad (1)$$

where A_k are p -by- p real matrices and τ_k are positive real numbers, for $k = 1, \dots, n$.

References

- [1] I. Györi and G. Ladas, Conditions for oscillations of difference equations with piecewise constant arguments. *SIAM J. Math. Anal.* 22: 769-773 (1991).
- [2] I. Györi and G. Ladas, *Oscillation Theory of Delay Differential Equations*. Oxford Univ. Press, 1991.
- [3] Q. Chuanxi, S.A. Kuruklis and G. Ladas, Oscillations of linear autonomous systems of difference equations. *Applicable Anal.* 36: 51-63 (1990).
- [4] R. P. Agarwal and S.R. Grace, The oscillation of certain difference equations, *Mathematical and Computer Modelling* 30: 53-66 (1999).
- [5] R. P. Agarwal, S.R. Grace and D. O'Reagan, *Oscillation Theory for Difference and Functional Differential Equations*. Kluwer, 2000.
- [6] W.A. Coppel, *Stability and Asymptotic Behavior of Differential Equations*. Heath, Boston, 1965.
- [7] C.A. Desoer and M. Vidyasagar, *Feedback Systems: Input-Output Properties*. Ac. Press, 1975.
- [8] J. Kirchner and U. Stroinsky, Explicit oscillation criteria for systems of neutral equations with distributed delay. *Differential Equations and Dynam. Systems* 3: 101-120 (1995).
- [9] J. M. Ferreira e S. Pinelas, Oscillatory mixed difference systems, *Advances in Difference Equations*, vol. 2006, Article ID 92923 (2006), 1-18.