

Hu, Guang-Da; Hu, Guang-Di

Stability of neutral delay-differential systems: Boundary criteria. (English) Zbl 0913.34060
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For linear neutral delay differential equations of the form

$$\dot{x}(t) = Ax(t) + Bx(t - \tau) + C\dot{x}(t - \tau),$$

where $x : \mathbb{R}_+ \rightarrow \mathbb{R}^n$ is an unknown function, A , B and C are constant $n \times n$ -matrices and $\tau = \text{const} > 0$, a series of delay dependent asymptotical stability criteria are given. The criteria are based on the evaluation of a real-valued function on the boundary of a rectangle in the complex plane.

Reviewer: [R.R.Akhmerov \(Novosibirsk\)](#)

MSC:

- [34K20](#) Stability theory of functional-differential equations
- [34K40](#) Neutral functional-differential equations
- [34K10](#) Boundary value problems for functional-differential equations

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Keywords:

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References:

- [1] Gopalsamy, K., *Stability and oscillations in delay differential equations of population dynamics*, (1992), Klumwer Academic Publishers Boston · [Zbl 0752.34039](#)
- [2] Hale, J.K.; Verduyn Lunel, S.M., *Introduction to functional differential equations*, (1993), Springer Verlag New York · [Zbl 0787.34002](#)
- [3] Kolmanovskii, V.; Myshkis, A., *Applied theory of functional differential equations*, (1992), Klumwer Academic Publishers Dordrecht · [Zbl 0917.34001](#)
- [4] Hu, G.-Di; Hu, G.-Da, Some simple stability criteria of neutral delay-differential systems, *Appl. math. comput.*, 80, 257-271, (1996) · [Zbl 0878.34063](#)
- [5] Li, L.M., Stability of linear neutral delay-differential systems, *Bull. austral. math. soc.*, 38, 339-344, (1988) · [Zbl 0669.34074](#)
- [6] Khusainov, D.Ya.; Yun'kova, E.A., Investigation of the stability of linear systems of neutral type by the Lyapunov function method, *Diff. uravn.*, 24, 613-621, (1988) · [Zbl 0674.34077](#)
- [7] Hu, G.-Di; Hu, G.-Da, Stability of discrete-delay systems: boundary criteria, *Appl. math. comput.*, 80, 95-104, (1996) · [Zbl 0874.93084](#)
- [8] Lancaster, P.; Tismenetsky, M., *The theory of matrices*, (1985), Academic Press Orlando, Florida · [Zbl 0516.15018](#)
- [9] Desoer, C.A.; Vidyasagar, M., *Feedback systems: input-output properties*, (1975), Academic Press New York · [Zbl 0327.93009](#)

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