On stability regions of modified midpoint method applied to linear delay differential equation

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The talk discusses stability properties of certain discretization of linear differential equation

$$y'(t) = ay(t) + by(t-\tau), \qquad t > 0,$$

where $a, b, \tau \in \mathbf{R}$, $\tau > 0$. We analyze regions of asymptotic stability of modified midpoint method applied to a linear differential equation with constant delay. Obtained results are compared with other known results, particularly for Euler discretization. There is discussed a relation between asymptotic stability conditions in the discrete case and continuous case, too. The talk is based on joint work with Jana Hrabalová.

References

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