

On Exponential Stability for a Linear Delay Differential Equation

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For a scalar linear delay equation

$$\dot{x}(t) = - \sum_{k=1}^m a_k(t)x(h_k(t)), \quad h_k(t) \leq t,$$

we discuss some methods, results and open problems on exponential stability.

In particular we consider a method based on Bohl-Perron type theorem, positiveness of the fundamental function and comparison with known exponentially stable delay differential equations.

New explicit stability conditions were obtained, including equations with positive and negative coefficients and equations with oscillating coefficients.

References

- [1] L. Berezansky, E. Braverman, On exponential stability of linear differential equations with several delays, *J. Math. Anal. Appl.* **324**, (2006), 2, 1336 – 1355.
- [2] L. Berezansky, E. Braverman, Explicit exponential stability conditions for linear differential equations with several delays, *J. Math. Anal. Appl.* **332**, (2007), 1, 246–264.