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Stability of Lyapunov exponents and Perron-type theorems

Hoang Linh Vu

VNU University of Science, Hanoi, Vietnam
linhvh@vnu.edu.vn

In this talk, first we briefly review some fundamental notions and results in the spectral theory for systems of differrential equations. We focus on the stability of Lyapunov/Bohl exponents of solutions when a linear system is subject to linear and nonlinear perturbations. In the latter case, the result is referred to as Perron theorem. Then, we discuss some interesting results in the last two decades, which are extensions of Perron theorem to functional differential equations by Pituk (2006), nonautonomous differential equations by Barreira et al. (2015), and differential-algebraic equations by Linh et al. (2022). Finally, we propose two conjectures that would improve and extend Barreira et al.'s result. A preliminary result is also given under the integral separation assumption.