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Lyapunov functions and exponential dichotomies for differential equations

This talk will discuss sufficient conditions, as well as necessary conditions, for a system of linear differential equations to have an exponential dichotomy. The criteria are expressed in terms of pairs of associated scalar functions. The approach seems to be amenable to the discussion of the behaviour of non-linear non-autonomous equations near an equilibrium. A question, recently raised by Arno Berger, about an equation whose linearization about an equilibrium has an exponential dichotomy on a compact time interval will be considered.