Berger, A.; **Doan, T. S.**; **Siegmund, S.**
A definition of spectrum for differential equations on finite time. (English) ｜Zbl 1169.34040｜
J. Differ. Equations 246, No. 3, 1098-1118 (2009).

The theory of hyperbolicity for linear systems of ordinary differential equations on the line is now well-developed. The authors study hyperbolic linear systems on compact time intervals. In this case, hyperbolicity means that if $\Phi(t,s)$ is the evolution operator of a linear system on an interval I, then

$$|\Phi(t,s)\xi| \leq \exp(-\alpha(t-s))|\xi|$$

for $t, s \in I$ with $t \geq s$ and for vectors ξ from the "stable subspace" at time s (and a similar estimate holds for the "unstable subspace" and $t \leq s$).

They introduce the notion of a finite time spectrum, prove an analog of the Sacker-Sell theorem, and treat the problem of uniqueness for spectral manifolds.

Reviewer: Sergei Yu. Pilyugin (St. Petersburg)

MSC:

34D09	Dichotomy, trichotomy of solutions to ordinary differential equations
34A30	Linear ordinary differential equations and systems, general

Cited in **18** Documents

Keywords:

linear differential equations; finite-time dynamics; exponential dichotomy; hyperbolicity; spectral theorem

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