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9. Ordinary Differential Equations and Dynamical Systems

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Keller, Gerhard, Universität Erlangen, Deutschland, and Liverani, Carlangelo, Universitá di Roma (Tor Vergata), Italia

Spectral stability of transfer operators under non-small perturbations

Transfer operators for dynamical systems that satisfy a Lasota-Yorke type inequality involving two function spaces B and L (like BV and L^1, or C^1 and C^0) are quasicompact as operators on B. We prove stability of their isolated eigenvalues outside the essential spectral radius and of their associated eigenprojections under a broad class of perturbations. The perturbations, although "small" in a dynamical sense like small random perturbations or the Ulam discretization scheme of the system, are large in operator norm (for operators from B to B). They are small, however, if the operator norm is taken for operators from B to L.