
Eigenfunctions of the Perron-Frobenius operator for uniformly hyperbolic area-preserving maps

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Abstract

In hyperbolic systems, the largest subunitary eigenvalue of the Perron-Frobenius (PF) operator gives the rate of decay of correlations of dynamics. The associated eigenfunction is smooth along unstable directions whereas it behaves erratically in stable directions. Almost-invariant sets are dominant geometric structures related to the decay of correlations, that can be computed by mapping eigenfunctions of the PF operator backward in time through the Koopman operator. In this talk, we will discuss the relationship between almost-invariant sets and unstable periodic points in uniformly hyperbolic area-preserving maps.

Keywords: hyperbolic maps, Perron Frobenius operator, Koopman operator, almost invariant sets

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