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MR1478538 (98i:58138)[Froyland, Gary \(5-WA\)](#)**Computer-assisted bounds for the rate of decay of correlations. (English summary)**[Comm. Math. Phys.](#) **189** (1997), *no. 1*, 237–257.[58F11 \(28D05\)](#)

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The rate of decay of correlations of an invariant measure of a discrete dynamical system describes the rate at which this system “mixes” the state space. For $C^{1+\gamma}$ expanding maps or $C^{1+\gamma}$ hyperbolic diffeomorphisms on compact connected Riemannian manifolds there exists a “natural” invariant measure of probability called equilibrium measure having an exponential rate of decay of correlations.

The paper presents a new rigorous method to estimate a bound for the rate of decay of correlations for $C^{1+\gamma}$ expanding maps and $C^{1+\gamma}$ two-dimensional Anosov diffeomorphisms. The method is based on the approximation of the transfer operator acting on the γ' -Hölder functions ($0 < \gamma' < \gamma$) by stochastic matrices describing the transition (relative to the Riemannian volume) associated to Markov partitions. Roughly speaking the rate of decay of correlations can be approximated by the “second eigenvalue” of a matrix. This method improves previous estimates and turns out to be more reliable; moreover, it gives the rate of decay of correlations for γ -Hölder observables that are particularly convenient for physical measurements. The method may be implemented on a computer; the author illustrates his technique by a one-dimensional example.

[Reviewed](#) by [Bernard Schmitt](#)

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Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.

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