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Erratum

On the Spectra of Randomly Perturbed Expanding Maps

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The authors wish to point out an error in Sublemma 6 in Sect. 5 of [1]. The claims in Theorems 3 and 3′ have been revised accordingly; a correct version is given below. Other results in [1] are not affected.

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i) Revised Statement of Results in Sect. 5.C

Section 5 of [1] is about piecewise C^2 expanding mixing maps f of the interval. The number Θ below refers to $\Theta = \lim_{n\to\infty} \sup(1/|(f^n)'|^{1/n})$. These maps are randmoly perturbed by taking convolution with a kernel θ_ε, and the resulting Markov chain is denoted χ^ε. The piecewise statements of Theorems 3 and 3′ should read as follows:

Theorem 3. *Let $f: I \to I$ be as described in Sect.* 5.A *of* [1], *with a unique absolutely continuous invariant probability measure $\mu_0 = \rho_0\, dm$, and let χ^ε be a small random perturbation of f of the type described in Sect.* 5.B *with invariant probabilty measure $\rho_\varepsilon\, dm$. We assume also that f has no periodic turning points. Then*

(1) *The dynamical system (f, μ_0) is stochastically stable under χ^ε in $L^1(dm)$, i.e., $|\rho_\varepsilon - \rho_0|_1$ tends to* 0 *as $\varepsilon \to 0$.*

Let $\tau_0 < 1$ and $\tau_\varepsilon < 1$ be the rates of decay of correlations for f and χ^ε respectively for test functions in BV. Then:

(2) $\limsup_{\varepsilon\to 0} \tau_\varepsilon \leqq \sqrt{\tau_0}$.

Theorem 3′. *Let f and χ^ε be as in Theorem* 3, *except that we do not require that f has no periodic turning points. Then*

(1) $|\rho_\varepsilon - \rho_0|_1$ *tends to* 0 *as* $\varepsilon \to 0$ *if* $2 < 1/\tau_0 \leqq 1/\Theta$;
(2) $\limsup_{\varepsilon\to 0} \tau_\varepsilon \leqq \sqrt{2\tau_0}$.