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Erratum

Markov Partition for Dispersed Billiards

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The aim of this note is to make some changes in the proof of Doeblin's condition for Markov partitions constructed in the entitled paper. We used the assertion about the existence of a finite collection $A=(C_1(\eta), \ldots, C_{m_0}(\eta))$ of elements of the Markov partition η such that for every $C(\eta) \notin \bigcup_{i=1}^{m_0} C_i(\eta)$ the set $TC(\eta)$ is another element of η. This statement in its exact form is wrong. Instead one should use the following proposition.

First introduce some definitions. Let a number $c>0$ be such that each regular segment of l.u.t.f. $\gamma^{(u)}$ (l.s.t.f. $\gamma^{(s)}$) with the length less than c intersects not more than r curves of the set $\bigcup_{i=1}^{K_0} T^{-i}S_0 \left(\bigcup_{i=1}^{K_0} T^{i}S_0\right)$, $\Lambda_{\min}^{K_0} > r+1$, and there exists an integer K_1 such that $\max_{C_{\xi_p^{(u)}},\, p>K_1} (\text{length}(C_{\xi_p^{(u)}})) < c$, $\max_{C_{\xi_p^{(u)}}} (\text{length}(C_{\xi_p^{(u)}})) > c$, where $\xi_p^{(u)} = \xi^{(u)} \vee \eta_p$. Let A_{n_1,n_2} be the set of all elements $C_i = C_i(\eta)$ for which $r_+(i) \leqq n_1$, $r_-(i) \leqq n_2$. We shall introduce also the following sets

$$G_{n,+}^{K_1} = \{x \colon T_1^s x \in A_{K_1,\infty} \text{ for some } s=0,1,\ldots,n\},$$

$$B_{n,+}^{K,K_1} = A_{K,\infty} \cap G_{n,+}^{K_1},$$

and

$$F_{n,+}^{K,K_1}(\alpha_1) = \{C_{\tilde{\eta}_K^{(u)}} \colon \nu(B_{n,+}^{K,K_1}/C_{\tilde{\eta}_K^{(u)}}) > 1-\alpha_1^{n\gamma}\},$$

where $0<\alpha_1<1$, $\gamma>0$, and $\tilde{\eta}_K^{(u)}$ is the partition of the set $A_{K,\alpha}$ induced by $\eta^{(u)}$.

Proposition. *There exist numbers α_1, $C>0$, $\gamma, \gamma'>0$ and δ, $0<\delta<1$, such that for all $n>0$,*

$$\nu\left(\bigcup_{K=1}^{n} \bar{F}_{n,\infty}^{K,K_1}(\alpha_1)\right) < C\delta^{n\gamma'},$$

where $\bar{F}$ denotes a complement of a set F.