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CORRECTION TO
"A GENERALIZED LOCAL LIMIT THEOREM FOR
LASOTA-YORKE TRANSFORMATIONS"

TAKEHIKO MORITA

(Received October 12, 1991)

Definition 1.1 of a Lasota-Yorke transformation in [1, p. 580] is incomplete because it is not consistent with the assertion of Remark 1.1. Therefore we have to change the condition (iii) of (1) as follows:

(iii) The set of the images \{T(\text{Int } I_j)\}_{j} consists of only a finite number of distinct kinds of intervals.

In virtue of this improvement, Proposition 1.2 in p. 582 and its proof will be changed as follows.

**Proposition 1.2.** (Lasota-Yorke type inequality). Let \( T \) be an L-Y transformation which satisfies the expanding condition (1.2) for \( N=1 \). Let \( \mathcal{L} \) be the P-F operator of \( T \) with respect to \( m \). Then for any \( n \in \mathbb{N} \) and \( f_0, f_1, \ldots, f_{n-1} \in BV(I \rightarrow S^1) \), we have

\[
V(\mathcal{L}^n((\prod_{k=0}^{n-1} f_k \circ T^k)g)) \leq (2 + \sum_{k=0}^{n-1} Vf_k)[e^n Vg + 2(\iota_1 + R_n(T))\|g\|_1] ,
\]

where \( \iota_n = \min\{m(T^n J_j) ; J_j \text{ is the element of a defining partition of } T^n\} \) and \( R_n(T) = \sup_x \frac{|(T^n)'(x)|}{|(T^n)(x)|} \).

Sketch of Proof: Noting that \( S_j = T^n | \text{Int } J_j \) is a homeomorphism from \( \text{Int } J_j \) onto its image for each \( j \), we have, for any right continuous version of \( g \in BV \),

\[
V(\mathcal{L}^n((\prod_{k=0}^{n-1} f_k \circ T^k)g)) \leq \sum_j V_{J_j}[(T^n)' | \cdot |^{-1}(\prod_{k=0}^{n-1} f_k \circ T^k)g] + \sum_{J_j \supset j} \sum_j |(T^n)' |^{-1}(|g(a_j)| + |g(b_j)|)
\]

\[
= \sum_j I_j + \sum_j II_j ,
\]

where \( J_j = (a_j, b_j) \), \( V_j \) denotes the total variation on \( J_j \), and \( \sup_{J_j} \) is the supre-
mum which is taken over all \(x \in \text{Int} J_j\). Since we have
\[
|(T^n)'(x)|^{-1} \leq ||(T^n)'(x)|^{-1} - |(T^n)'(y)|^{-1}| + |(T^n)'(y)|^{-1}
\leq R_n(T) m(J_j) + |(T^n)'(y)|^{-1}
\]
for any \(x, y \in \text{Int} J_j\) and
\[
m(T^n(\text{Int} J_j)) \leq (\inf_{(T^n)'} m(J_j))^{-1} m(J_j),
\]
we conclude that \(\sup_j |(T^n)'|^{-1} m(J_j)^{-1} \leq \inf_{(j)}\leq R_n(T)\), where \(\inf_{(j)}\) denotes the infimum which is taken over all \(x \in \text{Int} J_j\). By using this fact the estimates of \(I_j\) and \(II_j\) are carried out in the same way as in [1]. One may notice that the proof become simpler than it was because we do not need to classify the indices \(j\).

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References


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