

Corrections of the Book “Eigenvalues, Inequalities, and Ergodic Theory” by Mu-Fa Chen

(July 24, 2007)

- Page 14, line 7. ($p > 1$).
- Page 14, line 9. for some $\varepsilon > 0$. When $p = 1$, a constant $C \geq 1$ is added to the right-hand side.
- Page 14, line -5. long-standing
- Page 24, line -11. Remove the coefficient $\frac{1}{2}$
- Page 60, -4, replace “Set $u_{-1} = 0$. Define” by the following:
Set $u_{-1} = 0$. By (3.28) and the increasing property of g_i , we have

$$\mu_n b_n u_n = -\lambda_1 \sum_{i=0}^n \mu_i g_i \leq -\lambda_1 \sum_{i \leq n: g_i < 0} \mu_i g_i \leq (-\lambda_1 g_0) \sum_{i \leq n: g_i < 0} \mu_i \leq -\lambda_1 g_0 Z < \infty.$$

Hence $c < \infty$ and furthermore $g \in L^1(\pi)$. Define

- Page 96, line 9, $[0, \infty)$
- Page 118, line -6. Remove Z
- Page 118, line -5. Remove (since $\pi(f) \geq 0$)
- Page 118, line -4. Replace “Thus,” by the following
Replacing f with \bar{f} , it follows that
- Page 119, line -3. Replace $\varphi(x \wedge \cdot)^2$ by $\varphi(x \wedge \cdot)$

- Page 135, line 4, $D(\tilde{f}) \leq D(f)$
- Page 135, line -3,-4, replace v_j by v_i in two places.
- Page 154, line -11, Chen, 2002b.
- Page 156, line 11, replace “That is the first assertion” by the following.
 Actually, we have seen that there is a $t_0 > 0$ and $\gamma \in (0, 1)$ such that $\|P_{t_0} - \pi\|_{1 \rightarrow 1} \leq \gamma$. Given $t \geq 0$, express $t = mt_0 + h$ with $m \in \mathbb{N}_+$ and $h \in [0, t_0)$. Then for every f with $\pi(f) = 0$, we have $\pi(P_t f) = 0$ for all t , and furthermore

$$\|P_t f\|_1 = \|P_{mt_0+h} f\|_1 \leq \|P_h f\|_1 \gamma^m \leq \|f\|_1 \gamma^{t/t_0-1} = \gamma^{-1} e^{(t_0^{-1} \log \gamma) t} \|f\|_1$$
 for all t . This gives the required assertion since $\log \gamma < 0$.
- Page 158, line -6, (8.2)
- Page 159, line -5, remove the word “standard”.
- Page 161, 11. Replace 2000a by 2000b
- Page 182, -17. well-known
- Page 194, 10. Gronwall lemma
- Page 213, -9. LNM 1501, Springer, 1991
- Page 216, -21. Ann. Prob. \rightarrow Ann. Appl. Prob.
- Page 219, 10. Uspekhi Matem. Nauk, 49 \rightarrow Uspekhi Matem. Nauk, 49(6)

Corrections to the preprint

- Page 69, 18. After “Refer to”, add D. Bakry and M. Emery (1985),
- Page 139, 9-10. V.A. Kaimanovich
- Page 209. Add
 D. Bakry and M. Emery. Diffusions hypercontractives. *LNM*, 1123: 177–206, 1985.
- Page 223. Add Emery, M. 69
- Page 224. Kaimanovich, V.A.