Topics in the Constructive Theory of Countable Markov Chains

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List of errata

– **Page 8, Theorem 1.2.1** should be modified as follows:

Theorem 1.2.1 *If $Q(\alpha,\alpha) = 1$ for some α, then $Q(\beta,\beta) = 1$ for all β. Similarly, if $m_{\alpha\beta} + m_{\beta\alpha} = \infty$ for some pair (α,β), then $m_{\alpha\beta} + m_{\beta\alpha} = \infty$ for all (α,β).* ■

– **Page 8, Definition 1.2.2** should be modified as follows:

Definition 1.2.2 *An irreducible aperiodic MC is called*

(i) recurrent *if $Q(\alpha,\alpha) = 1$, at least for one state α;*

(ii) non recurrent *or* transient *if $Q(\alpha,\beta) < 1$, for some pair (α,β);*

(iii) positive recurrent *or* ergodic, *if $m_{\alpha\beta} + m_{\beta\alpha} < \infty$, at least for one pair (α,β);*

(iv) null recurrent *if $Q(\alpha,\alpha) = 1$ and $m_{\alpha\alpha} = \infty$, at least for one α;*

(v) non ergodic *if $m_{\alpha\beta} = \infty$, at least for one pair (α,β).*

– **Page 10, equation (1.9)** should be :

$$P(\xi_0 = \alpha_0, \ldots, \xi_{t_n} = \alpha_n) = p_{\alpha_0}(0) p_{\alpha_0\alpha_1}(t_1) \ldots p_{\alpha_{n-1}\alpha_n}(t_n - t_{n-1}).$$

– **Page 17, the left member of equation (2.3)** should be $E(\tilde{Y}_{n+1}/\mathcal{F}_{\tilde{N}_n})$.

– **Page 21, two lines above inequality (2.20)** :
replace $E(| S_n - S_{n+1} |^\alpha /\mathcal{F}_n)$ by $E(| \tilde{S}_n - \tilde{S}_{n+1} |^\alpha /\mathcal{F}_n)$.

– **Page 28, line 6 from bottom**, write

$$f(\alpha_j) = P\{\xi_\nu = \alpha_0, \xi_k \neq \alpha_0, 1 \le k < \nu/\xi_0 = \alpha_j\},\ j \ge 1.$$

– **Page 41, in the statement of theorem 3.3.2** replace *"conditions A and B hold."* by *"condition* ***A*** *holds."*

– **Page 56, lines 2 and 8 from above**, write $\frac{1}{2} \le \delta \le 1$ instead of $\frac{1}{2} < \delta \le 1$.

– **Page 56, line 8 from below**: replace "**Condition B**" by "**Condition C**".

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– **Page 59, one line before equation (3.51)**: "Condition **B**" should be "Condition **C**".

– **Page 64**: replace equation (3.60) by the following system (3.60):

$$\begin{cases} q_{\alpha\beta} & = w_\alpha \, \lambda_{\alpha\beta}, \quad \alpha \neq \beta, \\ q_{\alpha\alpha} & = 1 - \sum_{\alpha \neq \beta} q_{\alpha\beta}. \end{cases}$$

– **Page 64, last line** : write "$q_{\alpha\beta} = 0$" instead of "$p_{\alpha\beta} = 0$".

– **Page 68, 2 line from below**: should be

$$\Gamma^a_\wedge \cap \overline{B^{\wedge'}} = \emptyset, \quad \text{for } \wedge' \subseteq \wedge,$$

– **Page 72, in the statement of lemma 3.5.10**, replace "$i \in 1, \ldots, N$" by "$i \in \{1, \ldots, N\}$"

– **Page 73, equation (3.79) should be**

$$\mu_1(x) \leq -\frac{\theta \mu_2(x)}{2x} \ , \ \text{for } x \geq B \ ,$$

– **Page 76**, the first equation of theorem 3.6.4 should be

$$\mathbf{v}(\mathbf{x}) = \mathbf{v} + O(\| \, \mathbf{x} \, \|^{-\delta}) \ , \ \text{for some } \delta > 0 \ ,$$

– **Page 78, in (ii) of theorem 3.7.4**, replace "nullrecurrent" by "null recurrent"

– **Page 82**, line 6 from above: replace "$\eta_0 > 0$" by "$n_0 > 0$" .

– **Page 83**, lines 3 and 4 from above (under the Figures) : replace "chain" by "face".

– **Page 86**, insert a dot at the end of Equation (4.4) and start the next sentence by "We" instead of "we".

– **Page 88, third line in the proof of lemma 4.3.3**: replace

"$\alpha \in \mathbf{Z}_+^N \setminus B^\wedge_{R_1 R_2}$" by "$\alpha \in \mathbf{Z}_+^N \bigcap B^\wedge_{R_1 R_2}$".

– **Page 92**, 10 lines from below: the formula should be

$$p_{\alpha\beta} = 0 \, , \ \text{for } (\beta_i - \alpha_i) > -d, \ \forall i = 1, \ldots, N,$$