CORRECTIONS - Lecture notes on RWRE

1. Page 200, line 6, reverse < to > in first indicator.
2. Page 202, lines 2,3,10,12,13, replace $\rho_{(-i)}$ by $\rho_i$.
3. Page 206: the right side of equation (2.1.23) should be replaced by
   \[ \prod_{\ell=1}^{L} \left( \frac{m+k}{k} \right) (\omega_i^0)^{\eta^+} (\omega_i^-)^{k^+}. \]
   Last line, right most $E_{\omega}^n$ should be erased.
4. Page 207, last line, $\varpi(n)$ should be replaced by $\varpi(j)$.
5. Page 209, display below (2.1.29), the sum $\sum_{i=2}^{\infty}$ should be multiplied by $1/\omega_1^+$ and the sum $\sum_{i=1}^{\infty}$ should be multiplied by $1/\omega_0^+$.
6. Page 212, line -2 (Remark): As F. Rassoul-Agha pointed out to me, the argument given only shows that
   \[ P\left( \left| \left| \left| \frac{X_n - \nu_P n - Z_n}{\sqrt{n\sigma}} \right| > x \right| \Phi(-x) \right| > \delta \right) \to_{n \to \infty} 0, \]
   which gives less than a full-blown quenched CLT; To give a full quenched CLT requires an additional estimate. Update: Jon Peterson, in his thesis, has completed the details of this argument, by using hitting times. See arXiv:0810.0257v1 [math.PR], and also Ilya Goldsheid’s article “Simple transient random walks in one-dimensional random environment: the central limit theorem”, Probab. Theory Related Fields 139 (2007), pp. 41–64.
8. Page 219, line 2, replace $\leq \delta$ by $< \delta$.
9. Page 228: line 1, write $M_1^{x,v} = M_1^{x,v,P}$ and erase in line 5 the sentence “Let .....”.
10. Page 230, last display, last line: add (twice) $h(\eta|P)$.
11. Page 232, display below (2.3.47), last line: replace $\lambda_0(u)$ by $\lambda_0(u,\eta)$.
12. Page 239, line below (2.4.13), replace $\tilde{\tau}_k$ by $\tilde{\tau}_k^{(i)}$. 

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13. Page 240, (2.4.14) and (2.4.15): (2.4.14) does not follow from the $\alpha$ mixing condition $(D3)$. It does follow if one assumes $\beta$ mixing instead. Alternatively, (2.4.14) holds true if instead of the last summand in the right hand side one writes $n^2 m_k \alpha(2k)/4 + m_k \rho(\bar{\bar{r}}(1)) > n^2)/4 =: B(n)$. Using Lemma 2.4.16 and the definition of $\alpha(2k)$, one then replaces (2.4.15) by the estimate $B(n) \leq o(n^{1-s})$.

14. Page 247, (2.4.34), a factor $(1 - v/v_P)^{1/3}$ is missing on the right hand side.

15. Page 250, line 5, it would be clearer to write

$$LHS \leq \frac{1}{1 + \frac{\exp\{((\log n)(1) - W^n(\bar{\theta}))\}}{J(\log n)^2}}$$

where $\theta_n$ is the location of the maximum of $W^n$ on $(0, \bar{\bar{b}})$, and then continue (using the good event) with the current inequalities; line 9, replace $\omega_{a^{+}} - 1$ by $\omega_{a^{+}+1}$. Line 12, replace $2J^2$ by $2(J \log n)^2$.

16. Page 251, lines 3 and 19, replace $P_{\omega}^{\bar{\theta}}$ by $P_{\omega}^{\bar{\theta}^*}$. Line 19, last display in proof, replace in right side $(\bar{b} + \delta)$ by $J$.

17. Page 252, equation (2.5.12), replace $B_{-\alpha}$ by $B_\alpha$ (recall $\alpha < 0$).

18. Page 255, display (2.5.17): replace $Q(E_Q(\bar{b}(h) = \bar{b}(1)|\Gamma(h))$ by $E_Q(Q(\bar{b}(h) = \bar{b}(1)|\Gamma(h))$.

19. Page 256, line 4 and (2.5.19), condition on $s_+(1) = s_+(t)$. Line 5, add ) at end of line. Line 16, replace $f(z, \omega)$ by $f(z, w)$ and replace $e^{-w-(t-1)}$ by $e^{w-(t-1)}$.

20. Page 258: all of the multi-dimensional chapter 3 actually assumes that $P(\omega(0,0) > 0) = 0$, that is no holding times. This should have been stated explicitly as part of (A2).

21. Page 262, line -2, erase the words is omitted.

22. Page 263, last line, add ) after $h$.

23. Page 264: in lines 5 and 9, $P$ should be replaced by $P^\omega$ (twice in each line). In line 11, $Q^\omega$ should be $Q^\omega$. Finally, in line -7, $X_{\tau_k+y}$ should be replaced by $X_{\tau_k+y}$.

24. Page 265, in the left hand of (3.2.8), one should divide by $\tau_k$, not by $k$.

25. Page 268, line 8, replace lim inf by lim sup.

26. Page 270, change the index of summation in both sums in (3.3.7) from $i$ to $k$, replace $X_{i-1}$ by $X_{k-1}$, and $\Xi(i)$ by $\Xi(k)$.

27. Page 279, line 15, should have $A := [2\epsilon, 1-2\epsilon(d-1)]$. Line 19, $Y^n_{a} = X_n \cdot e_1$. Display below (3.3.24), $g_{n+1,\omega}(x+1)$ should be $g_{n-1,\omega}(x+1)$.
28. Page 300, lines 5,6, replace $x$ by $x_1$ ($x_1$ is as in (3.5.19)). Line 8, replace inf in the right hand side by sup, and $\alpha$ by $\bar{\alpha}$. In (3.5.20), replace $x_0$ by $x$, and in lines -4 and -3, replace $i$ by $i_0$. It is a good idea to replace $X_i$ by $\xi_i$ in the second half of the page.

29. Page 304, (3.5.25), replace $\tau_2 - \tau_2$ by $\tau_2 - \tau_1$.

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