Correction: Local Laws of the Iterated Logarithm for Diffusions

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CORRECTION

LOCAL LAWS OF THE ITERATED LOGARITHM FOR DIFFUSIONS

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In the paper some of the numerical constants appearing in Section 5 (pages 622–624) are incorrect due to a mishandling of the number 2 (a not unusual circumstance in this subject). Since that section was supposed to deal in precise values, it cannot be considered complete without the corrections provided here.

In equation (5.8) replace the number 2 by the number $\sqrt{2}$; ditto in (5.10). The process $R_t = \sqrt{2}(Z_t^\beta)^{1/2}$ is a Bessel process (not $(Z_t^\beta)^{1/2}$) of index (= dimension) $d = 2(\nu + \beta)$ (not $\nu + \beta$). Thus $\limsup(t \log|\log t|)^{-1} Z_t^\beta = 1$, and it follows that one should drop the 2 which appears in the denominator of (5.9) and in the equation just prior to the statement of Theorem 4, page 623. In Theorem 4 one must define ρ_ν to be the first positive zero of the Bessel function $J_{\nu-1}$ and then $d_\nu = \rho_\nu^2/4$. With these changes Theorem 4 is correct as stated. In the proof a factor $\sqrt{2}$ is needed in front of $(Z_t^0)^{1/2}$ which is then Bessel of index 2ν, not ν, as noted above. Equation (5.12) is correct with the definition of d_ν given here. The other quantities defined in Section 5 need no further modification. Finally, the correct values of the constants c and c^* in Remark 2 of Section 1 are found from Theorems 3 and 4 to be $c = 2/(\mu(0 +))^{1/2}$ and $c^* = (\pi/4)c$. Note that $m(dx) = 2\,dx$ in the Brownian motion case.

Halve the scale, double the speed,
Tis all the same in the Brownian creed.
No need to worry, no need to stew,
In appropriate units the answer is 2.

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