Erratum: Anomalously Long Passage through a Rounded-Off-Step Potential due to a New Mechanism of Multidimensional Tunneling [Phys. Rev. Lett. 97, 240403 (2006)]

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In the Letter [1], the long term evolution of the wave packet in Fig. 3(b) was miscalculated. The current result is shown in the bottom figure. Actually, we had made a mistake in the treatment of absorbing boundary condition in our numerical calculation, which caused an artificial interference oscillation in the long time tails. In the correct calculations, no oscillation appears in the tails and the exponent of the power-law decay is changed from $-\alpha \sim -1.7$ to -3.

In connection with this revision, "$\alpha \sim 1.7$" at the 8th line from the bottom in the left column in the last page is replaced by "$\alpha \sim 3$"; and the sentence starting from the last line in the left column is revised as "A complete semiclassical description of the anomalously slow relaxation in tunneling is probably possible and an important problem in terms of nonexponential decay [2,3]."

In our preliminary calculation, the t^{-3} decay in tunneling is also observed in long term evolution of a packet for a periodically perturbed right-angled step potential, which has exactly solved quasieigenstates similar to those of the periodically perturbed rounded-off-step potential [4]. Furthermore the t^{-3} decay is observed in the situation that a packet collides with a certain kind of scattering potentials [2,3]. Then the t^{-3} decay is quite generic and important.

We are grateful to Professor N. Yamada for a discussion on the t^{-3} decay.

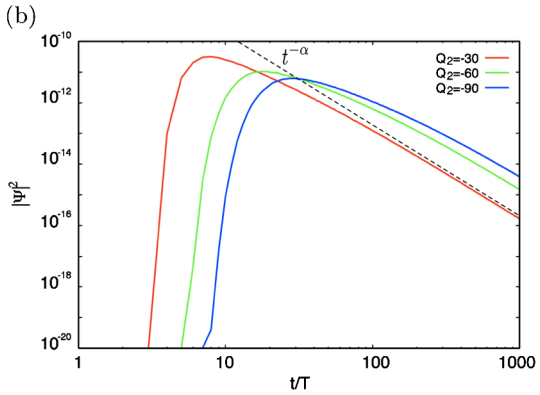

FIG. 3(b) (color online). Time evolution of an initially localized wave packet Ψ scattered by the oscillating rounded-off-step potential at $\epsilon = 0.1$. The width of the initial packet is given as $\delta Q = 5.0$ and the average energy as $\langle E \rangle = 0.75$. (b) Change of the tunneling probability at various points, $Q_2 = -30, -60, -90$. Figure (a) is omitted here, because it is the same as Fig. 3(a) in the Letter [1].

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