

ERRATA

Erratum: Charging effects in quantum wires [Phys. Rev. B 55, 9929 (1997)]

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Our treatment of charging effects in quantum wires is based on the boundary condition approach of Ref. 1. Due to underscreening effects found recently,² these boundary conditions have been corrected in a recent Erratum.¹ Here we summarize the modifications necessary for the present paper. The correct form of the boundary condition, Eq. (2.5), must read

$$\left(\pm \frac{1}{g^2} \frac{\partial}{\partial x} + \frac{1}{v_F} \frac{\partial}{\partial t} \right) \langle \theta(x \rightarrow \mp \infty, t) \rangle = e U_{\text{ex}} / 2 \sqrt{\pi} v_F.$$

The $1/g^2$ factor also appears in Eq. (2.6) and in various subsequent equations listed in the following.

The particular solution (2.8) reads

$$\theta_p(x, \tau) = - \frac{g^2 e \bar{\varphi}}{2 \sqrt{\pi} v_F} |x| - i \tau \frac{e(U_{\text{ex}} - \bar{\varphi})}{2 \sqrt{\pi}} + f(x) - f(0),$$

and therefore the first term in Eq. (2.9) must be multiplied by g^2 . Furthermore, the zero mode of the Lagrange multiplier is $\Lambda_p = i e \bar{\varphi} / 2 \pi$, and the rhs of Eq. (2.10) has to be multiplied by g^2 . As a consequence, the second term in S [after Eq. (2.14)] reads $(e \bar{\varphi} / 2 \pi) \int d\tau q(\tau)$. The factor g^2 also appears in the correct form of Eq. (3.1),

$$\rho_0(x) = - \frac{g^2 e U_{\text{ex}}}{2 \pi v_F} \text{sgn}(x) + \frac{1}{\sqrt{\pi}} \partial_x f(x),$$

which implies $Q_s = g^2 L e^2 U_{\text{ex}} / 4 \pi v_F$. Furthermore, the capacitance C_{fr} acquires a factor g^2 [rhs of Eq. (3.2)]. Using the example (3.3) then leads to an additional factor $g^2 = 1/(1+u)$ on the rhs of Eq. (3.4) and of the preceding equation for $\rho_0(x)$. Similarly, for the unscreened interaction (3.6), the result (3.7) and the preceding equation should be multiplied by $g^2 = [(2e^2/\pi \kappa v_F) \ln(R/d)]^{-1}$. Finally, Eq. (4.3) should read

$$e \Delta \varphi_G = \left[\frac{g^2 d}{\pi v_F} + \frac{2C}{e^2} \right]^{-1}.$$

All other statements and equations in our paper remain unaltered.

¹R. Egger and H. Grabert, Phys. Rev. Lett. **77**, 538 (1996); **80**, 2255(E) (1998).

²R. Egger and H. Grabert, Phys. Rev. Lett. **79**, 3463 (1997).