Erratum: Voltage-Biased Quantum Wire with Impurities [Phys. Rev. Lett. 77, 538 (1996)]

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[S0031-9007(98)05569-0]

In formulating the boundary condition for the boson phase field, the underscreening by a factor $1 - g^2$ found recently for Luttinger liquids [1] was not taken into account. The correct form of Eq. (5) must read

$$\left(\pm\frac{1}{g^2}\frac{\partial}{\partial x} + \frac{i}{v_F}\frac{\partial}{\partial\tau}\right)\langle\theta(x \to \mp\infty, \tau = 0)\rangle = \frac{eU}{2\sqrt{\pi}\,v_F},$$

such that there is a $1/g^2$ factor with the spatial derivative. The particular solution (8) therefore reads

$$\theta_p(x,\tau) = \frac{q_0}{2\sqrt{\pi}} - \frac{g^2 e\varphi}{2\sqrt{\pi}\,v_F}|x| - i\tau\frac{e(U-\varphi)}{2\sqrt{\pi}},$$

and the density (11) should be replaced by

$$\bar{\rho} = \frac{k_F}{\pi} - \frac{g^2 e\varphi}{2\pi v_F}\,\mathrm{sgn}(x).$$

The g^2 factor now implies that the usual voltage drop assumption becomes correct for very large impurity strength λ, i.e., the corresponding term in the action (10) should be $(e\varphi/2\pi)\int d\tau q(\tau)$. Furthermore, for $\lambda \to \infty$, both $q_{2k_F}(x)$ and the capacitance C_{2k_F} in Eq. (15) should incorporate the factor g^2. All other statements and physical conclusions in our Letter remain unaltered.

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