The transfer matrices of the self-similar fractal potentials on the Cantor set

2008 J. Phys. A: Math. Theor. 41 379801

(http://iopscience.iop.org/1751-8121/41/37/379801)

IOP PUBLISHING JOURNAL OF PHYSICS A: MATHEMATICAL AND THEORETICAL

J. Phys. A: Math. Theor. **41** (2008) 379801 (1p) doi:10.1088/1751-8113/41/37/379801

Corrigendum

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N L Chuprikov 2000 *J. Phys. A: Math. Gen.* **33** 4293–4308

There is an error in equation (1). The correct form of (1) reads

$$V_0(x) = V_0(\alpha x) + V_0[\alpha(x - x_0)]. \tag{1}$$

This change has an effect on all statements concerning the scale invariance of the SSFP. Now the first relation in appendix A must be replaced by

$$V_{n+1}(x) = V_n(\alpha x).$$

Relation (10) can be extended onto all levels of the SSFP, for any value of n

$$\mathbf{Z}_{n+1}(k) = \mathbf{Z}_n(\alpha k).$$

In this case, for any level n

$$\mathbf{Z}_n(\phi_n) = \mathbf{Z}_n(\alpha\phi_n)\mathbf{D}^{-1}(\phi_n, \gamma)\mathbf{Z}_n(\alpha\phi_n),$$

where $\phi_n = \phi/\alpha^n$. This functional equation is the same for all levels of the SSFP. Hence it is sufficient to find the transfer matrix $\mathbf{Z}_0(\phi)$ from this equation at $n = 0$ (or, equation (16) in the original paper). Then the transfer matrices for the nth level can be found with the help of the relations $\mathbf{Z}_n(\phi_n) = \mathbf{Z}_0(\phi) = \mathbf{Z}_0(\alpha^n\phi_n)$.

There are also two minor errors:

1) the expression $\sin[2(y_{n+1}(k) - \gamma k d_n)] \geqslant 0$, after relation (15), should be replaced by $\sin[2B(k, y_n(k))] \geqslant 0$;

2) the renewed sentence to precede relation (B2), in appendix B, reads 'Now let us solve this equation with respect to η, choosing the root which behaves correctly at $\widetilde{R} = 1 \ldots$' (rather than $\widetilde{R} = 0$).