

Tight-Binding Approach to Electronic Structure of C_{60}

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“ $2p\pi$ -band” appearing in the sentences from the 5-th line to the 7-th line in the right column at p. 3762 should be replaced by “ $2p\sigma$ -band.”

Electronic Structure of One-Dimensional Quasiperiodic Materials of $AB_{1-x}C_x$

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I have found an error in eq. (16) and accordingly in the following paragraph in p. 181: “This vanishing invariant . . . in the theory of the BQPLs.” Therefore, it should be replaced as follows:

“Substitute into the invariant of eq. (13) and after a straightforward but tedious calculation we obtain

$$I = \frac{E^2}{4T_a^2} \left(\frac{T_b}{T_c} - \frac{T_c}{T_b} \right)^2, \quad (16)$$

where we have used

$$\begin{aligned} \cosh^2(u) + \cosh^2(v) + \cosh^2(u+v) - 2 \cosh(u) \cosh(v) \cosh(u+v) - 1 &= 0, \\ \cosh(u) &\equiv (T_a/T_b + T_b/T_a)/2 \quad \text{and} \quad \cosh(v) \equiv (T_a/T_c + T_c/T_a)/2. \end{aligned} \quad (17)$$

This invariant I vanishes at $T_b = T_c$ or $E = 0$. Otherwise, it is always positive. This vanishing invariant at $T_b = T_c$ usually means that there is no quasiperiodicity in the system such that the system is trivial,^{11,12,18)} while the non-vanishing invariant means that the quasiperiodicity is effective. However, the vanishing invariant at $E = 0$ is not the case in our problem. No matter what values of T_a , T_b , and T_c are set, the invariant is always zero at this energy $E = 0$, because of the identity in eq. (17).¹⁹⁾ It rather means that unless $T_b = T_c$ the energy level at $E = 0$ always belongs to a band gap, while the energy level at $E = 0$ belongs to the six-cycle in the usual setting of two types of atoms (i.e., $A_{1-x}B_x$), where $I = (T_a/T_b - T_b/T_a)^2/4$.^{11,12,18)} This implies the validity of the SHL theorem in our problem, which will be discussed later. Thus, we see the reason why we have a Cantor set in the entire spectrum, which will be demonstrated just below. And this situation is essentially new in the theory of the BQPLs.”