

3.4. Current from QFL's

Consider the equations (G_B : ballistic conductance)

$$I = \frac{G_B}{q} (m^+ - m^-) \quad \text{(A)}$$

$$I = \frac{G_0}{q} (m_1 - m_2) \quad \text{(B)}$$

$$\text{where } G_0 = G_B \frac{l}{L + l}$$

3.4a

(a) Eqs.(A) and (B) are both generally correct

(b) Eq.(B) is generally correct, but (A) applies only to ballistic transport

(c) Eq.(A) is generally correct, but (B) applies only to diffusive transport

(d) Eq.(A) applies only to ballistic transport, while Eq.(B) applies only to diffusive transport

(e) None of the above

3.4b From the electrochemical potential profiles shown we can conclude that the device length in terms of the mean free path is given by

(a) $L/l = 0$

(b) $L/l = 1.5$

(c) $L/l = 15$

(d) $L/l = 25$

(e) None of the above

