2.7. Transmission

2.7a. The transmission through a 1D wire with a single scatterer having a potential U is shown for U=0 (transmission is one throughout the band) and for U ≠ 0. The value of U used in this calculation must be equal to (t: nearest neighbor coupling)

(a) $|t|$

(b) $\frac{|t|}{1 + |t|^2}$

(c) $2|t|$

(d) $\frac{|t|}{2}$

(e) $\cos t$

2.7b. The figure shows the dispersion relation for a 1D tight-binding model with nearest neighbor coupling equal to t. At which point is the velocity the largest, and what is its value?

a) A, 2t
b) B, 2t
c) C, 2t
d) B, -2t
e) C, -2t