

#Jenny



Finally I get this ebook, thanks for all these I can get now!

#Rio



Cool! I'am really happy

#Markus Jensen



I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook

#Hun Tsu



wtf this great ebook for free?!

#Che Salsa



My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler



so many fake sites. this is the first one which worked! Many thanks

PHYSICS 880.06 (Fall 2005) Problem Set 1 Solution

(1.1) AKM Problem 1.4

$$\frac{\partial \psi}{\partial t} = -i \left(\nabla^2 + \frac{m}{\hbar^2} V \right) \psi$$

$$\mathbf{H} = H_A$$

$$E(t) = E_0 e^{-i\omega t}$$

(a) Seek steady-state solutions of this form

$$\psi(\mathbf{r}, t) = \psi(\mathbf{r}) e^{-i\omega t}$$

$$\rightarrow \nabla^2 \psi(\mathbf{r}) = - \left(k^2 + \frac{m}{\hbar^2} V(\mathbf{r}) \right) \psi(\mathbf{r})$$

$$\left(-\omega + \frac{\hbar^2 k^2}{2m} \right) \psi(\mathbf{r}) = - \left(E_0 + \frac{\hbar^2 k^2}{2m} \right) \psi(\mathbf{r})$$

$$\left(-\omega + \frac{\hbar^2 k^2}{2m} \right) \psi(\mathbf{r}) = - \left(E_0 + \frac{\hbar^2 k^2}{2m} \right) \psi(\mathbf{r})$$

$$\left(-\omega + \frac{\hbar^2 k^2}{2m} \right) \psi(\mathbf{r}) = -E_0 \psi(\mathbf{r})$$

$$E_0 = E_0 + \frac{\hbar^2 k^2}{2m}$$

$$E_0 = \frac{\hbar^2 k^2}{2m}$$

$$E_0 = 0$$

The solution is

$$\psi_0 = \frac{e^{-i\omega t}}{1 - i\omega \tau} E_0$$

$$\psi_0 = \frac{e^{-i\omega t}}{1 - i\omega \tau} E_0$$

$$\psi_0 = 0$$

where

$$\tau = \frac{\hbar^2}{m E_0}$$

The current density is

$$\mathbf{j} = -\frac{i\hbar}{2m} \nabla \psi_0$$

$$\mathbf{j}_0 = \frac{e^{-i\omega t}}{1 - i\omega \tau} \mathbf{j}_0$$

$$\mathbf{j}_0 = \frac{e^{-i\omega t}}{1 - i\omega \tau} \mathbf{j}_0$$

$$\mathbf{j}_0 = 0$$

where

$$\tau = \frac{\hbar^2}{m E_0}$$

[Download PDF version of :](#)
Solid State Physics Ashcroft Mermin Solutions