CloudQAtest

Test_community1135 CHECK

-  Anonymous
- **Forum name:** #Test_Forum1209

How does a metal conduct electricity? You would think that a low-energy electron would have great difficulty passing through a solid conductor. Inside the solid, the atoms are packed together with very little spacing between them. But it turns out that the electrons are able to ‘travel’ through a perfect solid crystal smoothly and easily, almost as if they were in a vacuum. The ‘motion’ of electrons in a conductor, however, is very different from that of charges in empty space. When a steady current flows through a conductor, the electrons in it move with a certain average ‘drift speed’. One can calculate this drift speed of electrons for a typical copper wire carrying a small current, and it is found to be actually very small, of the order of 1 mm s-1. How is it then that an electric bulb lights up as soon as we turn the switch on? It cannot be that a current starts only when an electron from one terminal of the electric supply physically reaches the other terminal through the bulb, because the physical drift of electrons in the conducting wires is a very slow process. The exact mechanism of the current flow, which takes place with a speed close to the speed of light, is fascinating, but it is beyond the scope of this book. Do you feel like probing this question at an advanced level?

Comments (2)

Anonymous
4 years ago
Test1139
Agent007 RAW
4 years ago
Test1141