

Re: Angular Momentum & Energy Levels

Source: <http://sci.tech--archive.net/Archive/sci.physics/2005-05/msg00098.html>

- *From:* "Professor Gauss" <professor_gaussNO@xxxxxxxxxxxxxxxxx>
 - *Date:* Sun, 1 May 2005 08:39:42 -0400
-

"Sidney" <fieldphoton99@xxxxxxxxx> wrote in message
<news:1114901855.258324.147290@xx>

- >
- > It is said that the angular momentum L of the electron
- > cannot take on any arbitrary value, as is the usual case
- > in classical physics, but only certain values.
- > $L = 1 (h/2\pi)$ in the first orbit
- > $L = 2 (h/2\pi)$ in the second orbit
- > $L = 3 (h/2\pi)$ in the third orbit
- > and so on.
- >
- > Only orbits in which L is a whole multiple of the quantized
- > unit $h/2\pi$ are allowed.
- >
- > Now my inquiry is.
- >
- > What the heck has the angular momentum of the electron got
- > to do with the creation of different orbitals??
- >
- > Also the angular momentum of the electron is how fast it
- > rotates. But then electron doesn't really rotate. So what
- > does the angular momentum represent.
- >
- > Let's go to the earth-moon analogy. You are saying that
- > if there moon rotates faster or has large angular
- > momentum. It can say in orbit further in distance to what
- > it is now?? Meaning if the moon rotates 3 times faster.
- > It would become 3 times farther in distance to the earth??
- > This is what they are saying in the nucleus-electron thing.
- >
- > Sidney
- >

Angular momentum L involves the revolution of a body in its orbit, not rotation about its own axis. In the case of an electron, its mass is so low that it exhibits particle-wave duality. In models that apply classical mechanics to the electron (such as Bohr), only those orbitals are allowed that consist of a whole number of wavelengths along its entire arclength.

Re: Angular Momentum & Energy Levels

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Professor Gauss

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To hear is to forget,

To see is to remember,

To do is to understand.

--- Ancient Chinese proverb

Remove caps when replying.

--- me

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• **References:**

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◇ *From:* Sidney

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