

"archaic" view of atom structure

Source: <http://sci.tech-archive.net/Archive/sci.physics/2004-12/6564.html>

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Date: 12/17/04

Date: 16 Dec 2004 18:00:11 -0800

Earlier today, I was told that the view of an atom as a nucleus with electrons in circular orbits was "archaic". As I understand it (I am NOT a "card carrying physicist") this is, indeed a good, simplified view of the basic structure, and thus is useful for teaching and for calculations. In fact, this structure does occur. For example, it is present in hydrogen and helium atoms. In atoms with a larger number of electrons, some electrons are forced into larger circular orbits, and some into elliptical orbits. Am I OK so far?

Also, as I understand it, the term "cloud" when used to refer to electrons and their behavior, simply refers to the fact that the electron, unlike a planet in the solar system, does not remain constantly in the same orbit, but moves away from and toward the nucleus as it travels around it (we all learned in elementary school science that heat will cause this to occur). Thus, the electron would look, to an observer, like a fuzzy cloud, and not like a clearly defined ring.

Would a real "card carrying physicist", hopefully a physics instructor, please tell me if I am missing something here?