Tarea 6 Física del Electrón

Miercoles, 11 de Septiembre 2019

1. What is the wavelength of (a) a photon that has an energy of 10 eV, (b) an electron that has a kinetic energy of 6 MeV, (c) a neutron that has a momentum of 1 keV/c, and (d) a neutrino that has an energy of 1 GeV?

2. The following is taken from the AIP Physics News Update from 19Oct1999. Follow up by reading the article in Nature. Goto to *www.aip.org* if you like to subscribe to this free weekly service:

   WAVE PROPERTIES OF BUCKYBALLS have been observed in an experiment at the University of Vienna. Physical objects from quarks to planets have wavelike attributes. The quantum nature of a bowling bowl, unfortunately, is not manifest since its equivalent quantum (or de Broglie) wavelength is so tiny that interference effects (for example, the left part of the ball negating the right part of the ball) cannot be detected in a practical experiment. However, the wave properties of some composite entities, such as atoms and even small molecules, have previously been demonstrated. Now Anton Zeilinger at the University of Vienna (zeilinger-office@exp.uniwire.ac.at) has been able to perform the same feat for fullerenes, the largest objects (by a factor of ten) for which wavelike behavior has been seen. The researchers send a beam of the soccerball-shaped C-60 molecules (with velocities of around 200 m/sec) through a system of baffles and a grating (with slits 50 nm wide,100 nm apart) which yields a striking interference pattern characteristic of quantum behavior. Ironically the pattern indicating wave behavior is built up from an ensemble of individual sightings, each of which depends upon a buckyball's particle-like ability to make itself felt in an electrode. The interference is not negated thereby since it is not known by which path the C-60 came to be at the electrode.(Arndt et al., Nature, 14 October 1999.)