

TROUBLE WITH THE ELECTRON SPIN IN THE FIELD OF MAGNETISM

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Spin magnetic moments of electrons play a decisive role in the theory of magnetism. Our research has shown, however, that this is a sad misconception. It turned out that in all cases, physicists deal not with the own (spin) magnetic moments of free electrons, but with the orbital magnetic moments of electrons associated with the atoms. The present report is devoted to the rationale for this discovery. The history of introducing the concept of electron spin is associated with the Einstein-de Haas experiment on the determination of the magneto mechanical ratio (1915). They relied on Bohr's atomic model. From their experiment, it follows that the ratio of the magnetic moment of an orbiting electron to its mechanical moment exceeded in two times the expected (as followed from calculations) value. Calculation of the orbital magnetic moment of an electron in a hydrogen atom was carried out according to a simple formula: where the average value of the electric current is produced by an electron moving in orbit was determined by the formula, as described in all sources, including fundamental university textbooks on physics. This was a gross mistake that we will show in this report. As turned out, the true value of the average value of the circular current is twice as large, namely, to compensate, thus, the lost half of the moment at the calculations, the concept of spin of a relatively huge absolute value of, and corresponding to it, the spin magnetic moment were introduced eventually. The opinion has fully formed that the presence of an intrinsic mechanical moment, the spin, of an electron of magnitude, is a real fact. However, there are no direct evidences. Information on the determination of the spin magnetic moment on free electrons is absent



Biography

Georgi Shpenkov has completed his PhD in 1968 from Ioffe Physico-Technical Institute of RAS (Leningrad) and DrSc degree in 1991 (Tomsk, RAS). He is Retired Professor, Honorary Member of the Russian Physical Society. He has published 9 books and more than 100 papers in different issues. His main achievements include a series of key discoveries, in particular: the origin of mass; the nature of electric and gravitational charges; the Shell-Nodal (molecule-like) structure of atoms, the microwave background radiation of hydrogen atoms; the Fundamental Period-Quantum of the Decimal Code of the Universe, the Fundamental Frequencies of the atomic, subatomic and gravitational levels, and etc.

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