The Equation of a Light Leptonic Magnetic Monopole and its Experimental Aspects

Georges Lochak

Fondation Louis de Broglie, 23, rue Marsoulan, F-75012 Paris, France

Reprint requests to G. L.; inst.louisdebroglie@free.fr

Z. Naturforsch. **62a,** 231 – 246 (2007); received February 9, 2007

The present theory is closely related to Dirac's equation of the electron, but not to his magnetic monopole theory, except for his relation between electric and magnetic charge. The theory is based on the fact, that the *massless* Dirac equation admits a *second electromagnetic coupling*, deduced from a *pseudo-scalar* gauge invariance. The equation thus obtained has the symmetry laws of a massless *leptonic*, *magnetic monopole*, able to *interact weakly*. We give a more precise form of the Dirac relation between electric and magnetic charges and a quantum form of the Poincaré first integral. In the Weyl representation our equation splits into P-conjugated monopole and antimonopole equations with the correct electromagnetic coupling and *opposite chiralities*, predicted by P. Curie. Charge-conjugated monopoles are *symmetric in space* and not in time (contrary to the electric particles), an important fact for the vacuum polarization. Our monopoles are magnetically excited neutrinos, which leads to experimental consequences. These monopoles are assumed to be produced by electromagnetic pulses or arcs, leading to nuclear transmutations and, for beta radioactive elements, a shortening of the life time and the emission of monopoles instead of neutrinos in a magnetic field. A corresponding discussion is given.

Key words: Light Magnetic Monopole; Symmetry Laws; Nuclear Effects.