BOSONIC SYMMETRIES, SOLUTIONS, AND CONSERVATION LAWS FOR THE DIRAC EQUATION WITH NONZERO MASS

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S u m m a r y

In addition to the well-known Fermi properties of the Dirac equation, the hidden bosonic properties of this equation are found. The bosonic symmetries, solutions, and the conservation laws are under consideration. Such new features of the Dirac equation with nonzero mass are found with the help of the 64-dimensional extended real Clifford–Dirac algebra and 29-dimensional proper extended real Clifford–Dirac algebra. In this case, the start from the Foldy–Wouthuysen representation is of importance. It is shown that the Dirac equation can describe not only the fermionic but also the bosonic states.