EXPANSION OF THE TWO-PARTICLE DIRAC EQUATION IN POWERS OF $1/c$ TO HIGHER ORDERS

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S u m m a r y

Using an extension of the Foldy–Wouthuysen transformation to two-particle wave equations, we consider the problem of expansion of the two-body Dirac Hamiltonian in powers of $1/c$ up to the fourth order. The transformed Hamiltonian in an even-even form to order $1/c^4$ is obtained. It is shown that the extra terms which can be eliminated by additional unitary transformations appear in the expansion in higher orders. As an example, the Breit equation for Coulomb particles is considered, and all the terms of order $1/c^4$ in its reduction are calculated. The obtained results can be used for the expansion of relativistic and quasirelativistic two-particle wave equations to higher orders.