THE MODEL OF S-SCATTERING OF RELATIVISTIC NUCLEONS IN THE SINGLET STATE WITHIN THE DIRAC—BREIT APPROACH

I.V.Simenog, A.I.Turovsky

Bogolyubov Institute for Theoretical Physics,
Nat. Acad. Sci. of Ukraine
(*14b, Metrolohichna Str., Kyiv 03143, Ukraine)*

S u m m a r y

Using the proposed relativistic equation of the Schrödinger—Breit type within the Dirac—Breit approach with direct interaction potential, the problem of nucleon-nucleon scattering in the singlet state is studied in the framework of the method of phase-shift functions. Qualitative analysis is carried out for the main scattering parameters depending on the form of the direct interaction potential. With the use of potentials of the Yukawa type without significant short-range repulsing, a description is obtained for the experimental np-scattering S-phase-shift in the singlet state for the total energy range. Within our model, it is shown that the changing in the phase-shift sign and the nonzero asymptotics at high energies are of relativistic nature.