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# Spin effects in the Sommerfeld-Gamow-Sakharov factor

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A new resummation of the Sommerfeld-Gamow-Sakharov factor ($S$-factor)
of a composite system of two relativistic spin-1/2 particles of arbitrary masses interacting via a Coulomb-like chromodynamical potential is presented. The analysis is performed in the framework of a relativistic quasipotential approach based on the Hamiltonian formulation of the covariant quantum field theory in the relativistic configuration representation suggested by A.A. Logunov, A.N. Tavkhelidze and V.G. Kadyshevsky. The pseudoscalar, vector, and pseudovector systems are considered and the behaviour of the $S$-factor near the threshold and in the relativistic limit is investigated in detail. The spin dependence of the $S$-factors is discussed as well. It is argued that at the threshold the contribution of spins significantly reduces the Sommerfeld effect, while at ultrarelativistic velocities their role diminishes and the $S$-factor becomes basically the same as for the spinless systems. Relations to previously obtained $S$-factors for scalar particles of arbitrary masses and for relativistic spinor particles of equal masses are established.

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