Hadronic spin polarizabilities (gyrations) in the relativistic quantum field theory

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We analyze polarized Compton scattering which provides information on the structure of hadrons. On the basis of the correspondence principle between the relativistic moving medium electrodynamics and relativistic quantum field theory the covariant Lagrangian of the electromagnetic field interaction with the polarized spin particles have been obtained. This Lagrangian contains four independent covariant spin polarizabilities. These polarizabilities are related to the spin structure of the hadron at low energies and are structure-constants of the Compton scattering amplitude. The Lagrangian is shown to satisfy the main relativistic quantum field theory requirements and can be used for description of two-photon processes on hadrons.