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Hamiltonian formalism of spinning black holes in general relativity

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The mathematical treatment of the motion and spin precession of selfgravitating spinning compact objects in general relativity is manageable to the order linear in spin with the aid of the Tulczyjew stress-energy tensor in pole-dipole approximation, also applying regularization techniques. In my talk a Hamilton canonical treatment of gravitationally interacting spinning black holes will be presented using a tetrad-generalization of the Arnowitt-Deser-Misner canonical formulation of general relativity. The formalism is valid through linear order in the single spins. For binary systems, higher-order post-Newtonian Hamiltonians will be given in explicit analytic form. Higher order in spin generalizations will be discussed too.