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Investigation of symmetries and conserved charges in general relativity

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Abstract

This thesis presents a series of results relating to conserved charges in general relativity. In particular, we give a general expression for a gravitational charge corresponding to a boost Killing vector. Further, we use Hamiltonian perturbative techniques to obtain generalizations of the first law of black hole mechanics pertaining to accelerated black holes, stationary Kaluza-Klein black holes and static Kaluza-Klein bubble spacetimes. Finally, we present a generalized Hamiltonian formulation of gravity adapted to a higher dimension splitting of spacetime, motivated by the physics of branes. ^

Subject Area

Physics, Theory

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