

Boundary data in Canonical Relativity

Jerzy Kijowski
Center for Theoretical Physics
Polish Academy of Sciences
al. Lotników 32/46
02-668 Warsaw
POLAND

Abstract

Hamiltonian formulation of the dynamics of gravitational field is discussed and the role of surface integrals is analyzed. It is shown that different definitions of the quasi-local mass (Komar, Hawking, Brown-York) are related with specific control modes of the boundary data. Simple derivation of the “first law of thermodynamics” of black holes in this framework is presented and the role of Penrose inequality is discussed.