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Scattering of linear Dirac fields by a spherically symmetric black-hole. (English)

Zbl 0826.53072

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This paper presents a time-dependent scattering theory for the linear massless Dirac system on a general Schwarzschild-type metric which covers all the usual cases of spherical black-holes. After presenting the covariant generalization of the linear Dirac system on Schwarzschild-type metrics, the existence of classical wave operators is demonstrated using Cook's method. There is also demonstrated the asymptotic completeness of classical wave operators at the horizon of the black-hole and at infinity based on the results of A. Bachelot and A. Motet-Bachelot [Ann. Inst. Henri Poincaré, Phys. Théor. 59, No. 1, 3-68 (1993; Zbl 0793.53094)]. The methods in this paper seem to be suitable for demonstrating the existence and asymptotic completeness of Dollard- modified wave operators at infinity.

Reviewer: I.Gottlieb (Iași)

MSC:

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Keywords:

time-dependent scattering; linear massless Dirac system; spherical black- holes; classical wave operators

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