Cosmological perturbations of an S-matrix field

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Abstract

We consider the cosmological perturbations of an S-matrix field in an R^4-space-time. In particular, we consider the perturbations in the vicinity of a black hole. We study the perturbations of the scalar and electromagnetic fields in the vicinity of the black hole and show that the two fields obey the small-scale Lorenz laws. Furthermore, we show that the perturbations of the scalar fields in the vicinity of the black hole are completely determined by the dynamics of the black hole, while the electromagnetic field perturbations are entirely determined by the dynamics of the black hole.

1 Introduction

In the recent literature, the presence of a scalar vector field in an empty space-time (S) has been eagerly studied for a long time. However, the scalar and electromagnetic fields in the vicinity of a black hole in R^4-spacetime are not directly related [1]. In this paper, we consider the cosmological perturbations of an S-matrix field in an R^4-space-time-corresponding to an (S)-matrix field. We show that the scalar and electromagnetic fields obey the small-scale Lorenz laws in the vicinity of the black hole and that the electromagnetic perturbation is completely determined by the dynamics of the black hole.

In this paper, we will concentrate on the case where the black hole is a fixed point, R_{S}. In this case, we will be interested in the gravitational perturbations of a scalar vector field in the vicinity of the black hole. We will also be interested in the electromagnetic perturbations that arise in the vicinity of a black hole when one or more of the fields are negatively charged. In this paper we will also consider the case of a scalar vector field in an empty space-time. This is a good approximation to the physical value of the electromagnetic field, M_0.

The second part of this paper deal with the scalar vector field, M_0. The gravitational parameters are the same as in the first part of this paper, α being the mass of the vector field. We assume that the vector field is a scalar vector and that in the vicinity of the black hole one or more scalar vector field masses converge to infinity. This is equivalent to the case of a scalar vector field in an empty space-time, α being the mass of the vector field. We will remain only concerned with the gravitational perturbations that arise in the vicinity of a black hole, and we will not consider the case where one of the scalar vector mass is negative because the mass of the vector field is the mass of the vector mass. We will have only the gravitational parameters to determine the gravitational perturbation and we will not discuss the other parameters related to the gravitational parameter.

In the last section we have also considered the case of a vector field in the empty space-time. The gravitational parameters are identical to those in the first part of this paper and we have assumed that the vector field is a scalar vector in a empty space-time. The gravitational parameters are similar to those in the second part of this paper, we have shown that the gravitational perturbations arise in the vicinity of a black hole when one or more of the fields are positively charged. We will keep the first part of this paper in the bulk and we will not deal with the gravitational perturbations that arise in the vicinity of a black hole when one of the fields are negatively charged. We will only be interested in the gravitational perturbation that arises in the vicinity of a black hole when one of the fields are positively charged. We have also assumed that the vector field is a scalar vector and that in the vicinity of the black hole one or more scalar vector mass converge to infinity. This is equivalent to the case of a scalar vector field in an empty space-time, α being the mass of the vector field. We will remain only concerned with the gravitational perturbations that arise in the vicinity of a black hole when one of the fields are negatively charged.¡/

2 Elicitance of the S-matrix

The S-matrix$isasymmetricmatrixwithamatrixelement\S oftheformThefirstthingthatstrikesthe$
$TheEulerclassof$S$isdefinedbyIfthematrixelement$S$is$R(S)$itcanbewrittenintheformwhere\int_\tau S_{S=}$
corresponds to the lattice solution. The lattice solution is given by:

$$S_{E=E} = \frac{1}{2_S}. \tag{1}$$

The identity implies the following properties:

$$S_{E=E} = \int_\tau \int_\tau \int_\tau \int_\tau \int_\tau \int_\tau {}_{S=S}. \tag{2}$$

This implies that $_{S=S}$

3 Gauge formalism of the S-matrix

As a first step we introduce an arbitrary integral that fills the space-time with a Freeman-Identity. This integral can be calculated for a two-pointed black hole as follows. In the first form it is given by

$$\int_0^\infty dt \int_0^\infty dt \int_0^\infty dt \mathcal{M}_1(t,\rho) = \int_0^\infty dt \int_0^\infty dt \mathcal{M}_2(t,\rho) = -\int_0^\infty dt \int_0^\infty dt \mathcal{M}_3(t,\rho) \int_0^\infty dt \mathcal{M}_4(t,\rho) = -\int_0^\infty dt \mathcal{M}_5(t,\rho) \int_0^\infty dt \mathcal{M}_6(t,\rho) = \int_0^\infty dt \mathcal{M}_7(t,\rho)$$

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6 Appendix

We introduce the linearized form of the Einstein field equations in order to define the following numerical form of the Einstein equations. For simplicity let us assume the system is first given by

$$E_{\mu\nu} = -e^{i\alpha\beta\sqrt{\beta\alpha\beta\gamma}}, \tag{3}$$

where $\alpha\beta$ is the mass of the black hole and the γ is the Planck mass. We assume that all the parameters are in the following form.

$$\mathrm{e}^{(1/2)}(T) \sim e^{-1/2}(T)^{(1/2)} = e^{i\alpha\beta\gamma\gamma}.$$

Where $e^{-1/2}$ is a genuine euclidean function. Finally, γ is the cosmological constant. The following expressions are given by

$$e^{(1/2)}(T) = \sum_{\alpha} \tau \int d\tau \sqrt{\alpha\beta\gamma\gamma\gamma} - \tau \int d\tau \sqrt{\gamma\gamma\gamma\gamma\gamma\gamma\gamma}\Gamma(\tau\gamma\gamma\gamma)\Gamma(\gamma\gamma\gamma)\Gamma(\tau\gamma\gamma)\Gamma(\tau\gamma\gamma)\Gamma(\gamma\gamma)\Gamma(\gamma\gamma)\Gamma(\gamma\gamma) \tag{4}$$

7

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