



# Global existence of small amplitude solution to nonlinear system of wave and Klein-Gordon equations in four space-time dimensions

[Yue MA](#)

(Submitted on 19 Jul 2011 ([v1](#)), last revised 20 Jul 2011 (this version, [v2](#)))

In this article one will develop a so-called hyperboloidal foliation method, which is an energy method based on a foliation of space-time into hyperboloidal hypersurfaces. This method permits to treat the wave equations and the Klein-Gordon equations in the same framework so that one can apply it to the coupled systems of wave and Klein-Gordon equations. As an application, one will establish the global-in-time existence of small amplitude solution to the coupled wave and Klein-Gordon equations with quadratic nonlinearity in four space-time dimensions under certain conditions. Compared with those introduced by S. Katayama, the conditions imposed in this article permit to include some important nonlinear terms. All of these suggests that this method may be a more natural way of regarding the wave operator.

Comments: 31 pages

Subjects: **Analysis of PDEs (math.AP)**

Cite as: [arXiv:1107.3679](#) [math.AP]

(or [arXiv:1107.3679v2](#) [math.AP] for this version)

## Submission history

From: Yue Ma [[view email](#)]

[\[v1\]](#) Tue, 19 Jul 2011 10:48:35 GMT (23kb)

[\[v2\]](#) Wed, 20 Jul 2011 17:45:40 GMT (23kb)

[Which authors of this paper are endorsers?](#)

## Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

math.AP

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

Change to browse by:

[math](#)

## References & Citations

- [NASA ADS](#)

Bookmark([what is this?](#))

