



General Relativity and Quantum Cosmology

# Spherical linear waves in de Sitter spacetime

Joao L. Costa, Artur Alho, Jose Natario

(Submitted on 5 Jul 2011 (v1), last revised 25 May 2012 (this version, v2))

We apply Christodoulou's framework, developed to study the Einstein-scalar field equations in spherical symmetry, to the linear wave equation in de Sitter spacetime, as a first step towards the Einstein-scalar field equations with positive cosmological constant. We obtain an integro-differential evolution equation which we solve by taking initial data on a null cone. As a corollary we obtain elementary derivations of expected properties of linear waves in de Sitter spacetime: boundedness in terms of (characteristic) initial data, and a Price law establishing uniform exponential decay, in Bondi time, to a constant.

Comments: 9 pages, 1 figure; v2: minor changes, references added, matches final published version

Subjects: **General Relativity and Quantum Cosmology (gr-qc)**;  
Analysis of PDEs (math.AP)

MSC classes: 35L05

Journal reference: J. Math. Phys. 53 (2012) 052501

Cite as: [arXiv:1107.0802 \[gr-qc\]](#)  
(or [arXiv:1107.0802v2 \[gr-qc\]](#) for this version)

## Submission history

From: Jose Natario [[view email](#)]

[v1] Tue, 5 Jul 2011 07:34:26 GMT (15kb)

[v2] Fri, 25 May 2012 17:05:56 GMT (16kb)

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