

General Relativity and Quantum Cosmology

Modelling Extreme-Mass-Ratio Inspirals using Pseudospectral Methods

Priscilla Canizares, Carlos F. Sopuerta (ICE, CSIC-IEEC)

(Submitted on 26 Jan 2010)

We introduce a new time-domain method for computing the self-force acting on a scalar particle in a Schwarzschild geometry. The principal feature of our method consists in the division of the spatial domain into several subdomains and locating the particle at the interface between two them. In this way, we avoid the need of resolving a small length scale associated with the presence of a particle in the computational domain and, at the same time, we avoid numerical problems due to the low differentiability of solutions of equations with point-like singular behaviour.

Comments: 3 pages. To appear in Proceedings of the Twelfth Marcel Grossmann Meeting on General Relativity, edited by Thibault Damour, Robert T Jantzen and Remo Ruffini, World Scientific, Singapore, 2010

Subjects: **General Relativity and Quantum Cosmology (gr-qc)**; Galaxy Astrophysics (astro-ph.GA); High Energy Astrophysical Phenomena (astro-ph.HE)

Cite as: [arXiv:1001.4697v1](#) [gr-qc]

Submission history

From: Priscilla Canizares [[view email](#)]

[v1] Tue, 26 Jan 2010 14:18:33 GMT (14kb)

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

Download:

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

Current browse context:

gr-qc

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

[new](#) | [recent](#) | [1001](#)

Change to browse by:

[astro-ph](#)

[astro-ph.GA](#)

[astro-ph.HE](#)

References & Citations

- [SLAC-SPIRES HEP](#)
([refers to](#) | [cited by](#))
- [NASA ADS](#)
- [CiteBase](#)

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

[CiteULike logo](#)

[Connotea logo](#)

[BibSonomy logo](#)

[Mendeley logo](#)

[Facebook logo](#)

[del.icio.us logo](#)

[Digg logo](#)

[Reddit logo](#)