



# Classical and Quantum Gravity

## Numerical Relativity Update

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### Update on this important growth area in Classical and Quantum Gravity

Many significant problems involving strong-field gravitation require large-scale numerical computation for solution. The Editorial Board of Classical and Quantum Gravity wish to disseminate the latest work in numerical relativity as the field forges the tools necessary to tackle these problems.

Recent workshops and conferences have made important steps in qualifying and comparing results, and obtaining a firmer grasp on analytical and numerical tools to simulate Einstein equations. Solutions to these strong-field problems are vital to explaining astrophysical phenomena involving black holes and neutron stars and the physical interpretation of gravitational waveforms. Numerical relativity can also address fundamental aspects of general relativity such as critical phenomena and cosmic censorship. Important results have been produced and the field is headed for ever more exciting endeavours.

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Of special interest for those undertaking numerical work is the facility to publish supplementary data alongside your article.

Supplementary files might include initial or final data sets, extra figures, animations, movies and software code. The files are available to the reader immediately from the article abstract and are permanently archived as part of our electronic journals service. There is also an online repository specifically designed for the permanent storage and sharing of software code, which has facilities for linking to individual articles, and for the ongoing updating of code.

#### How to publish in Classical and Quantum Gravity

The Editorial Board welcomes further papers in this topic. If you would like to publish in CQG on this or any other aspect of gravitational physics, please contact us using our online submissions form at [www.iop.org/journals/authorsubs](http://www.iop.org/journals/authorsubs) or e-mail [cqg@iop.org](mailto:cqg@iop.org).

#### Recent papers published in this area include:

Numerical relativity using a generalized harmonic decomposition *F Pretorius* **Class. Quantum Grav.** **22 425, 21 Jan 2005**

The discrete energy method in numerical relativity: towards long-term stability *L Lehner, D Neilsen, O Reula and M Tiglio* **Class. Quantum Grav.** **21 5819, 21 Dec 2004**

Numerical computation of constant mean curvature surfaces using finite elements *Jan Metzger* **Class. Quantum Grav.** **21 4625, 7 Oct 2004**

A remedy for constraint growth in numerical relativity: the Maxwell case *Gioel Calabrese* **Class. Quantum Grav.** **21 4025, 7 Sept 2004**

Black-hole excision with multiple grid patches *Jonathan Thornburg* **Class. Quantum Grav.** **21 3665, 7 Aug 2004**

New phase diagram for black holes and strings on cylinders *T Harmark and N A Obers* **Class. Quantum Grav.** **21 1709, 2 Mar 2004**

Evolutions in 3D numerical relativity using fixed mesh refinement *E Schnetter, S H Hawley and I Hawke* **Class. Quantum Grav.** **21 1465, 23 Feb 2004**

Spherical harmonic decomposition on a cubic grid *C W Misner* **Class. Quantum Grav.** **21 S243, 13 Jan 2004**

Nonlinear impact of perturbation theory on numerical relativity *E Seidel* **Class. Quantum Grav.** **21 S339, 13 Jan 2004**

Tips for implementing multigrid methods on domains containing holes *S H Hawley and R A Matzner* **Class. Quantum Grav.** **21 805, 5 Jan 2004**

Towards standard testbeds for numerical relativity *M Alcubierre, G Allen, C Bona, D Fiske, T Goodale, F Siddhartha Guzmán, I Hawke, S H Hawley, S Husa, M Koppitz, C Lechner, D Pollney, D Rideout, M Salgado, E Schnetter, E Seidel, H Shinkai, D Shoemaker, B Szilágyi, R Takahashi and J Winicour* **Class. Quantum Grav.** **21 589, 10 Dec 2003**

A new general purpose event horizon finder for 3D numerical spacetimes *P Diener* **Class. Quantum Grav.** **20 4901, 6 Oct 2003**

#### Topical reviews

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