

Wolfgang Tichy's publication list:

L. Ji, A. Adhikari, W. Tichy, “Toward Moving Puncture Simulations with the Generalized Harmonic System”, in preparation

G. Doulis, S. Bernuzzi, W. Tichy, “Entropy based flux limiting scheme for conservation laws”, accepted for publication in *Phys. Rev. D*, arXiv:2401.04770 [gr-qc]

R. Gamba, M. Breschi, S. Bernuzzi, A. Nagar, W. Cook, G. Doulis, F. Fabbri, N. Ortiz, A. Poudel, A. Rashti, W. Tichy, M. Ujevic, “Analytically improved and numerical-relativity informed effective-one-body model for coalescing binary neutron stars”, submitted to *Phys. Rev. D*, arXiv:2307.15125 [gr-qc]

H. R. Rüter, V. Sagun, W. Tichy, T. Dietrich, “Quasi-equilibrium configurations of binary systems of dark matter admixed neutron stars”, *Phys. Rev.* **D108**, 124080 (2023), arXiv:2301.03568 [gr-qc]

W. Tichy, L. Ji, A. Adhikari, A. Rashti, M. Pirog, “The new discontinuous Galerkin methods based numerical relativity program Nmesh”, *Class. Quantum Grav.* **40**, 025004 (2023), arXiv:2212.06340

A. Gonzalez, F. Zappa, M. Breschi, S. Bernuzzi, D. Radice, A. Adhikari, A. Camilletti, S. V. Chaurasia, G. Doulis, S. Padamata, A. Rashti, M. Ujevic, B. Brügmann, W. Cook, T. Dietrich, A. Perego, A. Poudel, W. Tichy, “Second release of the CoRe database of binary neutron star merger waveforms”, *Class. Quantum Grav.* **40**, 085011 (2023), arXiv:2210.16366 [gr-qc]

T. Fegghi, W. Tichy, and A. W. C. Lau, “Pulling a harmonically bound particle subjected to Coulombic friction: A nonequilibrium analysis”, *Phys. Rev.* **E106**, 024407 (2022)

S. Mukherjee, N. K. Johnson-McDaniel, W. Tichy, S. L. Liebling, “Conformally curved initial data for charged, spinning black hole binaries on arbitrary orbits”, arXiv:2202.12133 [gr-qc]

M. Ujevic, A. Rashti, H. Gieg, W. Tichy, T. Dietrich, “High-accuracy high-mass ratio simulations for binary neutron stars and their comparison to existing waveform models”, *Phys. Rev.* **D106**, 023029 (2022), arXiv:2202.09343 [gr-qc]

A. Rashti, F. M. Fabbri, B. Brügmann, S. V. Chaurasia, T. Dietrich, M. Ujevic, W. Tichy, “New pseudospectral code for the construction of initial data”, *Phys. Rev.* **D105**, 104027 (2022), arXiv:2109.14511 [gr-qc]

R. Dudi, A. Adhikari, B. Brügmann, T. Dietrich, K. Hayashi, K. Kawaguchi, K. Kiuchi, K. Kyutoku, M. Shibata, W. Tichy, “Investigating GW190425 with numerical-relativity simulations”, *Phys. Rev.* **D106**, 084039 (2022), arXiv:2109.04063 [gr-qc]

R. Dudi, T. Dietrich, A. Rashti, B. Brügmann, J. Steinhoff, W. Tichy, “High-accuracy simulations of highly spinning binary neutron star systems”, *Phys. Rev.* **D105**, 064050 (2022), arXiv:2108.10429 [gr-qc]

A. Poudel, W. Tichy, B. Brügmann, T. Dietrich, “Increasing the accuracy of binary neutron star simulations with an improved vacuum treatment”, *Phys. Rev.* **D102**, 104014 (2020), arXiv:2009.06617 [gr-qc]

S. V. Chaurasia, T. Dietrich, M. Ujevic, K. Hendriks, R. Dudi, F. M. Fabbri, W. Tichy, B. Brügmann, “Gravitational waves and mass ejecta from binary neutron star mergers: Effect of the spin orientation”, *Phys. Rev.* **D102**, 024087 (2020), arXiv:2003.11901 [gr-qc]

W. Tichy, A. Rashti, T. Dietrich, R. Dudi, B. Brügmann, “Constructing Binary Neutron Star Initial Data with High Spins, High Compactness, and High Mass-Ratios”, *Phys. Rev.* **D100**, 124046 (2019), arXiv:1910.09690 [gr-qc]

T. Dietrich, A. Samajdar, S. Khan, N.K. Johnson-McDaniel, R. Dudi, W. Tichy, “Improving the NRTidal model for binary neutron star systems”, *Phys. Rev.* **D100**, 044003 (2019), arXiv:1905.06011 [gr-qc]

S.V. Chaurasia, T. Dietrich, N.K. Johnson-McDaniel, M. Ujevic, W. Tichy, B. Brügmann, “Gravitational waves and mass ejecta from binary neutron star mergers: Effect of large eccentricities”, *Phys. Rev.* **D98**, 104005 (2018), arXiv:1807.06857 [gr-qc]

T. Dietrich, D. Radice, S. Bernuzzi, F. Zappa, A. Perego, B. Brügmann, S.V. Chaurasia, R. Dudi, W. Tichy, M. Ujevic, “CoRe database of binary neutron star merger waveforms”, *Class. Quantum Grav.* **35** (2018) 24LT01, arXiv:1806.01625 [gr-qc]

T. Dietrich, S. Bernuzzi, B. Brügmann, W. Tichy, “High-resolution numerical relativity simulations of spinning binary neutron star mergers”, *Proceeding for the 26th Euromicro International Conference on Parallel, Distributed, and Network-Based Processing in Cambridge 2018*, PDP 2018 IEEE Catalog Number: CFP18169 arXiv:1803.07965 [gr-qc]

T. Dietrich, S. Bernuzzi, B. Brügmann, M. Ujevic, W. Tichy, “Numerical Relativity Simulations of Precessing Binary Neutron Star Mergers”, *Phys. Rev.* **D97**, 064002, 2018, arXiv:1712.02992 [gr-qc]

T. Dietrich, S. Bernuzzi, W. Tichy, “Closed-form tidal approximants for binary neutron star gravitational waveforms constructed from high-resolution numerical relativity simulations”, *Phys. Rev.* **D96**, 121501, 2017, arXiv:1706.02969 [gr-qc]

T. Dietrich, S. Bernuzzi, M. Ujevic, W. Tichy, “Gravitational waves and mass ejecta from binary neutron star mergers: Effect of the stars’ rotation”, *Phys. Rev.* **D95**, 044045, 2017, arXiv:1611.07367 [gr-qc]

W. Tichy, “The initial value problem as it relates to numerical relativity”, *Rept. Prog. Phys.* **80**, 026901, 2017, arXiv:1610.03805 [gr-qc]

T. Dietrich, M. Ujevic, W. Tichy, S. Bernuzzi, B. Bruegmann, “Gravitational waves and mass ejecta from binary neutron star mergers: Effect of the mass-ratio”, *Phys. Rev.* **D95**, 024029, 2017, arXiv:1607.06636 [gr-qc]

T. Dietrich, N. Moldenhauer, N. K. Johnson-McDaniel, S. Bernuzzi, C. M. Markakis, B. Bruegmann, W. Tichy, “Binary Neutron Stars with Generic Spin, Eccentricity, Mass ratio, and Compactness - Quasi-equilibrium Sequences and First Evolutions”, *Phys. Rev.* **D92**, 124007, 2015, arXiv:1507.07100 [gr-qc]

W. Tichy, J. R. McDonald, W. A. Miller, “New efficient algorithm for the isometric embedding of 2-surface metrics in 3 dimensional Euclidean space”, *Class. Quantum Grav.* **32**, 015002 (2015), arXiv:1411.0975 [gr-qc]

N. Moldenhauer, C. M. Markakis, N. K. Johnson-McDaniel, W. Tichy, B. Bruegmann, “Initial data for binary neutron stars with adjustable eccentricity”, *Phys. Rev.* **D90**, 084043, 2014, arXiv:1408.4136 [gr-qc]

J. Aasi et al., W. Tichy [co-author], “The NINJA-2 project: Detecting and characterizing gravitational waveforms modelled using numerical binary black hole simulations”, *Class. Quantum*

Grav. **31**, 115004 (2014), arXiv:1401.0939 [gr-qc]

S. Bernuzzi, T. Dietrich, W. Tichy, B. Bruegmann, “Mergers of binary neutron stars with realistic spin”, Phys. Rev. **D89**, 104021, 2014, arXiv:1311.4443 [gr-qc]

I. Hinder, A. Buonanno, M. Boyle, Z. B. Etienne, J. Healy, N. K. Johnson-McDaniel, A. Nagar, H. Nakano, Y. Pan, H. P. Pfeiffer, M. Pürrer, C. Reisswig, M. A. Scheel, E. Schnetter, U. Sperhake, B. Szilágyi, W. Tichy, B. Wardell, A. Zenginoglu, D. Alic, S. Bernuzzi, T. Bode, B. Brügmann, L. T. Buchman, M. Campanelli, T. Chu, T. Damour, J. D. Grigsby, M. Hannam, R. Haas, D. A. Hemberger, S. Husa, L. E. Kidder, P. Laguna, L. London, G. Lovelace, C. O. Lousto, P. Marronetti, R. A. Matzner, P. Mösta, A. Mroué, D. Müller, B. C. Mundim, A. Nerozzi, V. Paschalidis, D. Pollney, G. Reifenberger, L. Rezzolla, S. L. Shapiro, D. Shoemaker, A. Taracchini, N. W. Taylor, S. A. Teukolsky, M. Thierfelder, H. Witek, Y. Zlochower, “Error-analysis and comparison to analytical models of numerical waveforms produced by the NRAR Collaboration”, Class. Quantum Grav. **31**, 025012 (2013), arXiv:1307.5307 [gr-qc]

P Ajith, Michael Boyle, Duncan A Brown, Bernd Brügmann, Luisa T Buchman, Laura Cadonati, Manuela Campanelli, Tony Chu, Zachariah B Etienne, Stephen Fairhurst, Mark Hannam, James Healy, Ian Hinder, Sascha Husa, Lawrence E Kidder, Badri Krishnan, Pablo Laguna, Yuk Tung Liu, Lionel London, Carlos O Lousto, Geoffrey Lovelace, Ilana MacDonald, Pedro Marronetti, Satya Mohapatra, Philipp Mösta, Doreen Müller, Bruno C Mundim, Hiroyuki Nakano, Frank Ohme, Vasileios Paschalidis, Larne Pekowsky, Denis Pollney, Harald P Pfeiffer, Marcelo Ponce, Michael Pürrer, George Reifenberger, Christian Reisswig, Lucía Santamaría, Mark A Scheel, Stuart L Shapiro, Deirdre Shoemaker, Carlos F Sopena, Ulrich Sperhake, Béla Szilágyi, Nicholas W Taylor, Wolfgang Tichy, Petr Tsatsin and Yosef Zlochower, “Addendum to ”The NINJA-2 catalog of hybrid post-Newtonian/numerical-relativity waveforms for non-precessing black-hole binaries””, Class. Quantum Grav. **30**, 199401 (2013)

D. Hilditch, S. Bernuzzi, M. Thierfelder, Z. Cao, W. Tichy, B. Bruegmann, “Compact binary evolutions with the Z4c formulation”, Phys. Rev. **D88**, 084057, 2013, arXiv:1212.2901 [gr-qc]

W. Tichy, “Constructing quasi-equilibrium initial data for binary neutron stars with arbitrary spins”, Phys. Rev. **D86**, 064024, 2012, arXiv:1209.5336 [gr-qc]

G. Reifenberger and W. Tichy, “Alternatives to standard puncture initial data for binary black hole evolution”, Phys. Rev. **D86**, 064003, 2012, arXiv:1205.5502 [gr-qc]

P. Ajith et al., W. Tichy [co-author], “The NINJA-2 catalog of hybrid post-Newtonian/numerical-relativity waveforms for non-precessing black-hole binaries”, Class. Quant. Grav. **29**, 124001 (2012), arXiv:1201.5319 [gr-qc]

P. Marronetti and W. Tichy, “Recent Advances in the Numerical Simulations of Binary Black Holes”, Proceedings of the Department of Energy SciDAC Workshop (2011), arXiv:1107.3703 [gr-qc]

W. Tichy, “Initial data for binary neutron stars with arbitrary spins ”, Phys. Rev. **D84**, 024041, 2011, arXiv:1107.1440 [gr-qc]

W. Tichy and É. É. Flanagan, “Covariant formulation of the post-1-Newtonian approximation to General Relativity”, Phys. Rev. **D 84**, 044038, 2011, arXiv:1101.0588v1 [gr-qc]

W. Tichy and P. Marronetti, “A Simple method to set up low eccentricity initial data for moving puncture simulations”, Phys. Rev. **D 83**, 024012, 2011, arXiv:1010.2936v2 [gr-qc]

B. J. Kelly, W. Tichy, Y. Zlochower, M. Campanelli, B. F. Whiting, “Post-Newtonian Initial Data with Waves: Progress in Evolution”, Class. Quant. Grav. **27**, 114005, 2010.

arXiv:0912.5311 [gr-qc]

N. K. Johnson-McDaniel, N. Yunes, W. Tichy, and B. J. Owen, “Conformally curved binary black hole initial data including tidal deformations and outgoing radiation”, *Phys. Rev. D* **80**, 124039, 2009, arXiv:0907.0891 [gr-qc]

W. Tichy, “Long term black hole evolution with the BSSN system by pseudo-spectral methods”, *Phys. Rev. D* **80**, 104034, 2009, arXiv:0911.0973v2 [gr-qc]

I. Vega, S. Detweiler, P. Diener, and W. Tichy, “Self-force with (3+1) codes: a primer for numerical relativists”, *Phys. Rev. D* **80**, 084021, 2009, arXiv:0908.2138 [gr-qc]

W. Tichy, “A new numerical method to construct binary neutron star initial data”, *Class. Quant. Grav.* **26**, 175018 (2009), arXiv:0908.0620 [gr-qc]

B. Aylott et al., W. Tichy [co-author], “Testing gravitational-wave searches with numerical relativity waveforms: Results from the first Numerical INjection Analysis (NINJA) project”, *Class. Quant. Grav.* **26**, 165008 (2009), arXiv:0901.4399 [gr-qc]

L. Cadonati et al., W. Tichy [co-author], “Status of NINJA: the Numerical INjection Analysis project”, *Class. Quant. Grav.* **26**, 114008 (2009), arXiv:0905.4227 [gr-qc]

W. Tichy and P. Marronetti, “The final mass and spin of black hole mergers”, *Rapid Communication in Phys. Rev. D* **78**, 081501 (2008), arXiv:0807.2985 [gr-qc]

P. Marronetti, W. Tichy, B. Brügmann, J. Gonzalez, and U. Sperhake, “High-spin binary black hole mergers”, *Phys. Rev. D* **77**, 064010 (2008), arXiv:0709.2160 [gr-qc]

B. Brügmann, J.A. Gonzalez, M. Hannam, S. Husa, U. Sperhake and W. Tichy, “Calibration of Moving Puncture Simulations”, *Phys. Rev. D* **77**, 024027 (2008), gr-qc/0610128

B. J. Kelly, W. Tichy, M. Campanelli and B. F. Whiting “Black hole puncture initial data with realistic gravitational wave content”, *Phys. Rev. D* **76**, 024008 (2007), arXiv:0704.0628 [gr-qc]

W. Tichy and P. Marronetti, “Binary black hole mergers: large kicks for generic spin orientations”, *Rapid Communication in Phys. Rev. D* **76**, 061502 (2007), gr-qc/0703075

P. Marronetti, W. Tichy, B. Brügmann, J. Gonzalez, M. Hannam, S. Husa, and U. Sperhake, “Binary black holes on a budget: Simulations using workstations”, *Class. Quant. Grav.* **24**, S43-S58 (2007), gr-qc/0701123

B. Brügmann, J. González, M. Hannam, S. Husa, P. Marronetti, U. Sperhake, W. Tichy, “Gravitational Wave Signals from Simulations of Black Hole Dynamics”, contribution to the 9th Results and Review Workshop of HLRs Computing Center, Stuttgart, Germany, Oct. 13–14 2006, published in “High Performance Computing in Science and Engineering 2006”, Springer, 2006.

N. Jansen, B. Brügmann and W. Tichy, “Numerical stability of the AA evolution system compared to the ADM and BSSN systems”, *Phys. Rev. D* **74**, 084022 (2006)

W. Tichy, “Black hole evolution with the BSSN system by pseudo-spectral methods”, *Phys. Rev. D* **74**, 084005 (2006), gr-qc/0609087

N. Yunes, and W. Tichy, “Improved initial data for black hole binaries by asymptotic matching of post-Newtonian and perturbed black hole solutions”, *Phys. Rev. D* **74**, 064013 (2006), gr-qc/0601046

N. Yunes, W. Tichy, B. J. Owen, and B. Brügmann, “Binary black hole initial data from matched asymptotic expansions”, *Phys. Rev. D* **74**, 104011 (2006), gr-qc/0503011.

M. Ansorg, B. Brügmann and W. Tichy, “A single-domain spectral method for black hole puncture data”, *Phys. Rev. D* **70**, 064011 (2004), gr-qc/0404056

B. Brügmann, W. Tichy and N. Jansen, “Numerical simulation of orbiting black holes”, *Phys. Rev. Lett.* **92**, 211101 (2004), gr-qc/0312112

W. Tichy and B. Brügmann, “Quasi-equilibrium binary black hole sequences for puncture data derived from helical Killing vector conditions”, *Phys. Rev. D* **69**, 024006 (2004), gr-qc/0307027

W. Tichy, B. Brügmann and P. Laguna, “Gauge conditions for binary black hole puncture data based on an approximate helical Killing vector”, *Phys. Rev. D* **68**, 064008 (2003), gr-qc/0306020

W. Tichy, B. Brügmann, M. Campanelli and P. Diener, “Binary black hole initial data for numerical general relativity based on post-Newtonian data”, *Phys. Rev. D* **67**, 064008 (2003), gr-qc/0207011

W. Tichy and É. É. Flanagan, “Angular momentum ambiguities in asymptotically flat perturbed stationary spacetimes”, *Proceedings of the Ninth Marcel Grossmann Meeting on General Relativity*, edited by V.G. Gurzadyan, R.T. Jantzen and R. Ruffini, World Scientific, Singapore, p. 1622, (2002)

W. Tichy and É. É. Flanagan, “Angular momentum ambiguities in asymptotically flat spacetimes which are perturbations of stationary spacetimes”, *Class. Quant. Grav.* **18**, 3995 (2001)

W. Tichy, É. É. Flanagan and E. Poisson, “Can the post-Newtonian gravitational waveform of an inspiraling binary be improved by solving the energy balance equation numerically?”, *Phys. Rev. D* **61**, 104015 (2000), gr-qc/9912075

W. Tichy and É. É. Flanagan, “How unique is the expected stress-energy tensor of a massive scalar field?”, *Phys. Rev. D* **58**, 124007 (1998), gr-qc/9807015

J. von Delft, D. S. Golubev, W. Tichy and A. D. Zaikin, “Parity-Effected Superconductivity in Ultrasmall Metallic Grains”, *Phys. Rev. Lett.* **77**, 3189-3192 (1996), cond-mat/9604072