Daniel Martin Siegel

Curriculum Vitae

June 23, 2018

Current Address:
Center for Theoretical Physics
Columbia Astrophysics Laboratory
Department of Physics
Columbia University
916 Pupin Hall
538 West 120th Street
New York, NY 10027
dsiegel [AT] astro.columbia [DOT] edu

Current position

NASA Einstein Postdoctoral Fellow
Center for Theoretical Physics and Columbia Astrophysics Laboratory,
Columbia University, New York
Faculty/Science Contact: Prof. Brian Metzger

Fall 2018 ***Assistant Professor***
Perimeter Institute for Theoretical Physics and The University of Guelph,
Ontario, Canada

Academic degrees

11/2015 Dr. rer. nat. in Theoretical Astrophysics (summa cum laude, "with distinction")
Max Planck Institute for Gravitational Physics (Albert Einstein Institute, AEI)
and University of Potsdam
Thesis advisor: Prof. Dr. Dr. h.c. Bernard F. Schutz (Director, AEI)
Thesis title: *Binary neutron star mergers and short gamma-ray bursts: magnetohydrodynamics and electromagnetic emission*

09/2011 Diploma in Physics (1.0, "with distinction")
University of Freiburg and Kiepenheuer Institute for Solar Physics (KIS)
Thesis advisors: PD Dr. M. Roth, Prof. Dr. O. von der Lühe (Director, KIS)
Thesis: *Excitation of stellar oscillations by gravitational waves*
Pre-Diploma (1.0, best exam of the year), July 2007

Awards and scholarships

2016 NASA Einstein Postdoctoral Fellowship

2016 Honorable Mention, Thesis Prize and the Braccini Thesis Prize of the Gravitational Wave International Committee (GWIC)

2012–2015 Max Planck Society doctoral grant

2013 Karl Schwarzschild Prize
Sponsored by Springer for the best work and talk presented at the Karl Schwarzschild Meeting, Frankfurt

2012 Participant of the 62nd Lindau Nobel Laureate Meeting dedicated to Physics
Nominated by the president of the Leibniz Association and qualified in a multistep worldwide competition

2008-2011 German National Academic Foundation scholarship ("Studienstiftung des deutschen Volkes", supporting the top 0.5% of university students in Germany across all scientific disciplines)

2007 Erasmus scholarship for Imperial College London

2005-2015 e-fellows scholarship

2005 German Physical Society (DPG) Book Award

Previous positions

2016–present *Einstein Fellow*, Center for Theoretical Physics and Columbia Astrophysics Laboratory, since Aug. 2016

2015–2016 *Postdoctoral Research Scientist*, Center for Theoretical Physics and Columbia Astrophysics Laboratory, Nov. 2015–July 2016

Professional education

2012–2015 *Ph.D. student* in the Astrophysical and Cosmological Relativity Division at the AEI (advisor: Prof. B. F. Schutz)

2012–2015 Member of the International Max Planck Research School on Gravitational Wave Astronomy

2005–2011 *Studies of Physics*, University of Freiburg
Specialization in theoretical astrophysics, cosmology, general relativity, quantum field theory, mathematics in quantum mechanics, string theory, differential geometry, theory and numerics of PDEs

2008–2009 *Studies of Physics*, University of Heidelberg

2008 *Visiting summer student*, Imperial College London, Astrophysics Group (advisor: Y. Unruh), funded by the Undergraduate Research Opportunities Programme (UROP)

2007–2008 *Graduate exchange student*, Imperial College London
Imperial College International Diploma in Physics (ICID) August 2008

Research interests and expertise

- *Multimessenger astronomy, compact binary mergers*: electromagnetic (EM) signatures from neutron star mergers across the EM spectrum
- *Nuclear astrophysics*: r-process nucleosynthesis from neutron star mergers and other sites
- *Numerical Relativity, microphysics, high-performance computing*: fully general-relativistic magnetohydrodynamics (GRMHD), weak interactions and neutrino radiation transport, microphysical equation of states (EOS) of nuclear matter, thermonuclear reactions and nucleosynthesis
- *Transient Astronomy*: gamma-ray bursts, X-ray/UV/optical transients, kilonovae, superluminous supernovae (SLSNe), fast radio bursts (FRBs)
- *Accretion physics*: magnetohydrodynamics and microphysics of astrophysical accretion flows, jet formation processes
- Electromagnetic emission (models) of *long and short gamma-ray bursts* (SGRBs), including afterglows
- *Theory of gamma-ray bursts* both in the compact binary coalescence scenario for short bursts and in the stellar core-collapse scenario for long bursts
- Theoretical *modeling of gravitational wave sources*, astrophysics and cosmology with gravitational waves
- *Neutron stars and pulsar wind nebulae*: magnetars, pulsars and pulsar wind nebulae, applications to fast radio bursts (FRBs), superluminous supernovae (SLSNe), and neutron star mergers

Key scientific achievements

2017-2018 Provided the arguably yet strongest evidence from first principles for neutron star mergers being the prime production site for r-process elements in the universe (Siegel & Metzger 2017 (selected PRL Editors' Suggestion, featured in *Physics*: Viewpoint by S. Rosswog), Siegel & Metzger 2018a)

2017-2018 Provided the arguably most convincing explanation for the red kilonova from the first detection of a binary neutron star merger (GW170817) by LIGO and Virgo (Siegel & Metzger 2017, Siegel & Metzger 2018a)

2017-2018 Accomplished the first fully self-consistent study of neutrino-cooled accretion disks by means of numerical simulations. Established fundamental properties such as the emergence of a hot corona that drives strong thermal disk outflows, the operation of a magnetic dynamo in the presence of weak interactions, identification of a self-regulation mechanism by weak interactions etc. (Siegel & Metzger 2018a)

2016 Proposal of a model to compute the electromagnetic radiation from long-lived binary neutron star merger remnants, bridging the gap between GRMHD simulations of the

merger process and the short gamma-ray burst (SGRB) afterglow timescales. Identification of a promising high-energy electromagnetic counterpart to the gravitational wave signal of binary neutron star mergers with long-lived remnants (Siegel & Ciolfi 2016a, Siegel & Ciolfi 2016b); this model may enable LIGO and its EM partner facilities to make another breakthrough discovery over the next few years: observing the formation of a magnetar

2015 Proposition of a new scenario for SGRBs, which can explain the combined phenomenology of observed prompt SGRB and X-ray afterglow emission and thus solve a fundamental puzzle in SGRB modeling for neutron star mergers with strong baryon pollution (Ciolfi & Siegel 2015a, subject of a press release)

2014 Magnetically driven winds from differentially rotating neutron stars: established properties of mass ejection and a universal relation for the Poynting-flux luminosity. Identification of a new electromagnetic counterpart to binary neutron star mergers that can explain the early X-ray afterglows of SGRBs (Siegel, Ciolfi & Rezzolla 2014)

2013 First direct evidence for the magnetorotational instability (MRI) in a global three-dimensional general-relativistic magnetohydrodynamic simulation, and in the strong-gravity regime, with important implications for SGRBs (Siegel et al. 2013, subject of a press release)

2011, 2014 Derivation of a hydrodynamical formalism to describe the excitation of stellar oscillations by gravitational waves, developing a method to place an upper bound on the energy density of a stochastic background of gravitational waves with the help of asteroseismology, and application of this method to derive an upper bound using high-precision seismic data from the Sun (Siegel & Roth 2011, Siegel & Roth 2014)

Computational grants

2017-present PI of a NASA High-End Computing Program (HEC) allocation for the NASA flagship cluster *Pleiades* (6.0 million CPU hours)

2017-present PI of a NASA High-End Computing Program (HEC) allocation on *Pleiades* (8.1 million CPU hours)

2016-2017 Co-PI of a NASA High-End Computing Program (HEC) allocation on *Pleiades* (5.7 million CPU hours)

2015-2016 Co-PI of a NASA High-End Computing Program (HEC) allocation on *Pleiades* (4.3 million CPU hours)

2015 Collaborator on a CINECA Class B project on FERMI (8.5 million CPU hours)

2014–2017 Collaboration on magnetized binary neutron star simulations with B. Giacomazzo, R. Ciolfi, W. Kastaun (Univ. of Trento), L. Baiotti (Univ. of Osaka) and R. Perna (Stony Brook), PRACE Tier-0 computing grant (15.7 million CPU hours)

2013 Collaborator on a PRACE Tier-0 computing grant (14 million CPU hours; Project ID: pr32pi) on SuperMUC, *Numerical Simulation of Binary Black Hole and Neutron Star Mergers*

Service, synergistic and international professional activities

- Referee: The Astrophysical Journal, The Astrophysical Journal Letters, Living Reviews in Relativity, NASA reviewer (NASA Earth and Space Science Fellowships)
- Member of the Columbia University High-Performance Computing Operating Committee, which oversees the operation of the local *Habanero* supercomputing cluster
- Organizer of a one-week *international workshop* on computational methods in general-relativistic (magneto-)hydrodynamics, Center for Theoretical Physics, Columbia University, New York, Jan. 2017
- Organizer of a *Rapid Response Workshop* on the first detection of a binary neutron star merger by LIGO and Virgo, Center for Theoretical Physics, Columbia University, New York, Oct. 2017 (together with B. Metzger, J. Barnes)
- Organizer of a *Rapid Response Workshop* on Compact Binary Mergers after LIGO's first detection of gravitational waves, Center for Theoretical Physics, Columbia University, New York, Feb. 2016 (together with B. Metzger, N. Stone)

Teaching and advising

Teaching

2017 *Substitute lecturer*, Columbia University, holding two classes of the Columbia Physics course PHYS W4019: Mathematical Methods of Physics (for Brian Metzger)

2011 *Substitute lecturer*, University of Freiburg, holding two classes of a theoretical physics course on stellar structure/evolution and asteroseismology (for Markus Roth)

2011 *Teaching assistant*, University of Freiburg, designing problem sets, holding tutorials for the aforementioned lecture course on asteroseismology and stellar evolution

2011 Advising undergraduate students for a seminar talk on solar-terrestrial relations with regard to Earth's climate (KIS, Univ. of Freiburg)

2011 Advising undergraduate students for a seminar talk on gravitational waves (KIS, Univ. of Freiburg)

Advising

2017-present Dhruv Desai, undergraduate/now graduate student (physics), recovery schemes in GRMHD (his undergraduate research with me already led to a first publication)

2017-present Andrew Liu, undergraduate student (physics), neutrino transport in GRMHD

2014 Advising a summer student at the AEI, writing a TOV solver and investigating basic properties of relativistic stars

Outreach & media

2017 Viewpoint article by S. Rosswog in *Physics* on my recent PRL (Siegel & Metzger 2017a): *Out of Neutron Star Rubble Comes Gold*

2017 Science advisor for the *New York Times* story covering the recent observation of a binary neutron star merger by LIGO (GW170817) and associated EM counterparts

2015 Interview for Deutschlandfunk (Germany's most renowned radio station) on gravitational waves for a series to celebrate 100 years of general relativity (in German)

2015 Outreach talk on gamma-ray bursts for high school students, AEI, Potsdam

2014 Outreach talk on binary neutron star mergers for high school students, AEI, Potsdam

2014 Open Day at the Science Park Potsdam-Golm, public outreach talk (in German), *Neutronensterne und Schwarze Löcher im Computer: Was numerische Simulationen über Einsteins relativistisches Universum verraten*, AEI, Potsdam

2014 Girl's Day at the AEI, outreach talk for female high school students (in German), *Kurze Gamma-Blitze und die stärksten Magnetfelder im Universum*, AEI, Potsdam

2014 Outreach talk for the Konrad-Adenauer-Stiftung (in German), *Astrophysikalische Relativitätstheorie… mit dem Computer!*, AEI, Potsdam

2014 Invited public talk on short gamma-ray bursts, Bruno H. Bürgel Observatory, Berlin

2011 Outreach talk for physics teachers, *Einstein's legacy: the quest for gravitational waves*, Kiepenheuer Institute for Solar Physics, Freiburg

2010 Outreach talk for physics teachers, *Global climate change induced by the Sun?*, Kiepenheuer Institute for Solar Physics, Freiburg

2010–2012 Public outreach talks and guided tours at the former observatory of the Kiepenheuer Institute for Solar Physics near Freiburg

Publications

Refereed Journal articles

2018 Siegel D. M. & Metzger B., 2018a, *Three-dimensional GRMHD simulations of neutrino-cooled accretion disks from neutron star mergers*, ApJ **858**, 52, arXiv:1711.00868

2018 Siegel D. M., Mösta P., Desai D. & Wu S., 2018, *Recovery schemes for primitive variables in general-relativistic magnetohydrodynamics*, ApJ **859**, 71, arXiv:1712.07538

2018 Horowitz C. J. et al. 2018, *r-Process Nucleosynthesis: Connecting Rare-Isotope Beam Facilities with the Cosmos*, topical review, submitted to Journal of Physics G, arXiv:1805.04637

2017 Siegel D. M. & Metzger B., 2017, *Three-dimensional general-relativistic magnetohydrodynamic simulations of remnant accretion disks from neutron star mergers: outflows and r-process nucleosynthesis*, PRL **119**, 231102, arXiv:1705.05473
(selected PRL Editors' Suggestion, featured in *Physics*: Viewpoint by S. Rosswog)

2017 Ciolfi R., Kastaun W., Giacomazzo B., Endrizzi A., Siegel D. M. & Perna R., 2017, *General relativistic magnetohydrodynamic simulations of binary neutron star mergers forming a long-lived neutron star*, PRD **95**, 063016, arXiv:1701.08738

2016 Siegel D. M. & Ciolfi R., 2016a, *Electromagnetic emission from long-lived binary neutron star merger remnants I: formulation of the problem*, ApJ **819**, 14, arXiv:1508.07911

2016 Siegel D. M. & Ciolfi R., 2016b, *Electromagnetic emission from long-lived binary neutron star merger remnants II: lightcurves and spectra*, ApJ **819**, 14, arXiv:1508.07939

2015 Ciolfi R. & Siegel D. M., 2015a, *Short gamma-ray bursts in the "time-reversal" scenario*, ApJ Letters **798**, L36, arXiv:1411.2015

2014 Siegel D. M., Ciolfi R. & Rezzolla L., 2014, *Magnetically driven winds from differentially*

rotating neutron stars and X-ray afterglows of short gamma-ray bursts, ApJ Letters **785**, L6, arXiv:1401.4544

2014 Siegel D. M. *&* Roth M., 2014, *An upper bound from helioseismology on the stochastic background of gravitational waves*, ApJ **784**, 88, arXiv:1401.6888

2013 Siegel D. M., Ciolfi R., Harte A. I. *&* Rezzolla L., 2013, *Magnetorotational instability in relativistic hypermassive neutron stars*, PRD Rapid Communication **87**, 121302(R), arXiv:1302.4368

2012 Siegel D. M. *&* Roth M., 2012, *On the feasibility of employing solar-like oscillators as detectors for the stochastic background of gravitational waves*, AN **333**, 978, arXiv:1401.6883

2011 Siegel D. M. *&* Roth M., 2011, *Excitation of stellar oscillations by gravitational waves: hydrodynamic model and numerical results for the sun*, ApJ **729**, 137, arXiv:1103.0373

2010 Siegel D. M. *&* Roth M., 2010, *Excitation of non-radial stellar oscillations by gravitational waves: a first model*, MNRAS **408**, 1742, arXiv:1006.4803

Refereed Proceedings

2015 Siegel D. M. *&* Ciolfi R., 2015c, *Magnetically-induced outflows from binary neutron star merger remnants*, Proceedings of Swift: 10 Years of Discovery, Rome, 2014, Proceedings of Science (SWIFT 10)169 (2015), arXiv:1505.01423

2015 Ciolfi R. *&* Siegel D. M., 2015b, *Short gamma-ray bursts from binary neutron star mergers: the time-reversal scenario*, Proceedings of Swift: 10 Years of Discovery, Rome, 2014, Proceedings of Science (SWIFT 10)108 (2015), arXiv:1505.01420

2015 Siegel D. M. *&* Ciolfi R., 2015d, *Magnetic field amplification in hypermassive neutron stars via the magnetorotational instability*, in Proc. of the 1st Karl Schwarzschild Meeting on Gravitational Physics, Frankfurt, 2013, ed. P. Nicolini et al., Springer Proceedings in Physics **170** (2015), arXiv:1401.5275 (awarded Karl Schwarzschild Prize)

Code publications

2018 Siegel D. M. *&* Mösta P., 2018, *GRMHD_con2prim: a framework for the recovery of primitive variables in general-relativistic magnetohydrodynamics*, Zenodo, doi:10.5281/zenodo.1213306

Theses

2015 Siegel D. M., 2015, Ph.D. thesis, *Binary neutron star mergers and short gamma-ray bursts: magnetohydrodynamics and electromagnetic emission*, Albert Einstein Institute and Univ. of Potsdam

2011 Siegel D. M., 2011, Diploma thesis, *Excitation of stellar oscillations by gravitational waves*, KIS and Univ. of Freiburg

Press releases, newspaper articles & others

2015 Siegel D. M. *&* Ciolfi R., *It ain't magic: "Time-reversal" in Neutron Star Collisions*, press release, AEI (January 29, 2015)

2015 Siegel D. M., *Short gamma-ray bursts and the strongest magnetic fields in the Universe*, invited research report for the 2015 Yearbook of the Max Planck Society

2014 Siegel D. M., *Rätselhafte Blitze*, press interview and popular science newspaper article, Märkische Allgemeine Zeitung (MAZ; August 7, 2014)

2013 Siegel D. M., Ciolfi R. & Rezzolla L., *The largest magnetic fields in the universe*, press release, AEI (July 26, 2013)

Electronic links

Please find an up-to-date list of my publications on INSPIRE and on the ADS database.

Talks

Invited talks

2018 *Modeling neutrino-cooled accretion disks in GRMHD with GRHydro*, invited talk, North American Einstein Toolkit Workshop, Georgia Tech, Atlanta, June 2018

2018 *The Cosmic Origin of the Heavy Elements: Implications from the Neutron Star Merger GW170817*, invited talk, Thirteenth Conference on the Intersections of Particle and Nuclear Physics (CIPANP 2018), Palm Springs, California, June 2018

2018 *Neutron star mergers and the cosmic origin of the heavy elements*, invited colloquium, Department of Physics, University of Amsterdam, The Netherlands, March 2018

2018 *Neutron star mergers and the cosmic origin of the heavy elements*, invited colloquium, Department of Physics, Syracuse University, Syracuse, New York, Feb. 2018

2018 Invited panelist on kilonovae and neutron star mergers, Physics and Astrophysics at the eXtrme (PAX) workshop, The Pennsylvania State University, College Park, Feb. 2018

2018 *Neutron star mergers and the cosmic origin of the heavy elements*, invited colloquium, Perimeter Institute for Theoretical Physics, Waterloo, Canada, Feb. 2018

2018 Invited participant, Computational Methods for General Relativistic Magnetohydrodynamics: con2prim and friends, Perimeter Institute for Theoretical Physics, Waterloo, Canada, Feb. 2018

2018 *Neutron star mergers and the cosmic origin of the heavy elements*, invited colloquium, Institute for Gravitation and the Cosmos, The Pennsylvania State University, College Park, Jan. 2018

2018 *The firework of electromagnetic counterparts from GW170817*, invited review talk, High Energy Astrophysics Division (HEAD) special session "Multi-messenger Astrophysics from a Neutron Star Merger", 231st Meeting of the American Astronomical Society, Washington D.C., Jan. 2018

2017 *Neutron star post-merger simulations: disk winds and the red kilonova from GW170817*, invited talk, KITP conference "GW170817: The First Double Neutron Star Merger", Kavli Institute for Theoretical Physics, Santa Barbara, California, Dec. 2017

2017 *Neutrino-cooled accretion disks, GW170817 and its red kilonova*, invited TAC seminar, UC Berkeley, Nov. 2017

2017 *Neutron star post-merger simulations and the red kilonova from GW170817*, invited talk,

The Astrophysics of Neutron Star Mergers meeting, Center for Computational Astrophysics, Flatiron Institute, New York, Nov. 2017

2017 *A 'hard' look at models of high energy emission on the face of GW170817*, invited review talk, Lights, Sounds, Action in Strong Field Gravity workshop, Perimeter Institute For Theoretical Physics, Waterloo, Canada, Nov. 2017

2017 *Neutron star post-merger simulations, r-process nucleosynthesis and electromagnetic counterparts*, invited review talk and invited discussion lead on NS–NS and NS–BH post-merger simulations, eXtreme Matter meets eXtreme Gravity workshop, eXtreme Gravity Institute (XGI), Bozeman, Montana, Aug. 2017

2017 *Neutron star mergers and multi-messenger astronomy*, invited review talk, Tera Electron Volt Particle Astrophysics 2017 conference (TeVPA 2017), Columbus, Ohio, Aug. 2017

2017 *GRMHD simulations of remnant accretion disks from neutron star mergers*, invited talk, Electromagnetic Signatures of r-process Nucleosynthesis in Neutron Star Binary Mergers conference, Institute for Nuclear Theory program, INT Seattle, Aug. 2017

2017 *Remnant accretion disks from neutron star mergers*, invited talk, The Accreting Universe, TDLI workshop, Tsung-Dao Li Institute, Shanghai, China, July 2017

2017 *R-process nucleosynthesis and electromagnetic emission from NS merger remnants*, invited talk, Nuclear Astrophysics in the Gravitational-Wave Astronomy Era conference, European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*), Trento, Italy, June 2017

2017 *Joint optical and gravitational-wave science*, invited discussion panelist, GW-LSST workshop, Columbia University, May 2017

2017 *Compact binary mergers: electromagnetic counterparts and heavy-element nucleosynthesis*, invited colloquium, Physics Department, Virginia Tech, Blacksburg, Virginia, April 2017

2017 *Electromagnetic signatures of compact binary coalescence (CBC) systems*, invited talk, The Dawning Era of Gravitational-Wave Astrophysics, Aspen Center for Physics Winter Conference, Feb. 2017

2016 *Electromagnetic counterparts from long-lived binary neutron star merger remnants*, invited talk, Short gamma-ray bursts: from observation to numerical simulations conference (SGRB 2015), University of Trento, Italy, Sep. 2016

2016 KITP program *Astrophysics from LIGO's First Black Holes*, invited program participant, Kavli Institute for Theoretical Physics, Santa Barbara, California, Aug. 2016

2016 *Electromagnetic counterparts to the gravitational wave signal of compact binary mergers*, invited Institute Seminar talk, Physics Department, University of Trento, Italy, June 2016

2016 *"Low"-temperature and "low"-density physics: implementation of the Helmholtz EOS in GRMHD*, invited talk, Einstein Toolkit Meeting 2016, University of Trento, Italy, June 2016

2016 *Late-time outflows from binary neutron star mergers: strong X-rays vs r-process kilonovae*, invited talk, The r-process nucleosynthesis: connecting FRIB with the cosmos, ICNT workshop, Michigan State University, East Lansing, Michigan, May 2016

2016 *Electromagnetic counterparts to the gravitational wave signal of compact binary mergers*, invited talk, Rapid Response Workshop on Compact Binary Mergers, Center for

Theoretical Physics, Columbia University, Feb. 2016

2015 *Electromagnetic counterparts to the gravitational wave signal of binary neutron star mergers*, Astrophysical and Cosmological Relativity Division Seminar, AEI, Potsdam, Germany, Sep. 2015

2015 *Short gamma-ray bursts in the "time-reversal" scenario*, invited Institute Seminar talk, Physics Department, University of Trento, Italy, Feb. 2015

2014 *Magnetically driven winds from differentially rotating neutron stars and X-ray afterglows of short gamma-ray bursts*, SFB/Transregio 7—Gravitational Wave Astronomy Video Seminar, April 2014

2013 *On the magnetorotational instability in hypermassive neutron stars*, SFB/Transregio 7—Gravitational Wave Astronomy Video Seminar, May 2013

2011 *Excitation of stellar oscillations by gravitational waves*, seminar talk, AEI, Potsdam, Germany, Sep. 2011

2011 *Stars as detectors for gravitational waves?*, seminar talk, AEI, Hannover, Germany, Feb. 2011

2011 *Global climate change induced by the Sun?*, Observatorio del Teide Technical Meeting, Kiepenheuer Institute for Solar Physics, Freiburg, Germany, Jan. 2011

2010 *Excitation of solar and stellar oscillations by gravitational waves*, Institute Seminar, National Solar Observatory (NSO), Tucson, Arizona, Aug. 2010

Contributed talks

2017 *Remnant accretion disks from neutron star mergers*, contributed talk, Microphysics in Computational Relativistic Astrophysics conference 2017 (MICRA 2017), Michigan State University, East Lansing, Michigan, July 2017

2016 *Electromagnetic transients from long-lived BNS merger remnants*, contributed talk, Astrophysics in the Era of Gravitational Wave and Multimessenger Observations, JSI workshop, Annapolis, Maryland, Nov. 2016

2016 *Electromagnetic counterparts from long-lived binary neutron star merger remnants*, contributed talk, 21st International Conference on General Relativity and Gravitation (GR 21), Columbia University, July 2016

2015 *Electromagnetic emission from long-lived binary neutron star merger remnants*, contributed talk, 28th Texas Symposium on Relativistic Astrophysics, Geneva, Switzerland, Dec. 2015

2015 *Short gamma-ray bursts from binary neutron star mergers: the time-reversal scenario*, contributed talk, 28th Texas Symposium on Relativistic Astrophysics, Geneva, Switzerland (held by R. Ciolfi), Dec. 2015

2015 *Recent progress in three-dimensional simulations of core-collapse supernovae*, review talk, Astrophysical and Cosmological Relativity Division Seminar, AEI, Potsdam, Germany, March 2015

2014 *Short gamma-ray bursts in the "time-reversal" scenario*, contributed talk, CoCoNuT meeting 2014, Valencia, Spain, Nov. 2014

2014 *Short gamma-ray bursts in the "time-reversal" scenario*, Astrophysical and Cosmological Relativity Division Seminar, AEI, Potsdam, Germany, Nov. 2014

2014 *Magnetically driven winds from differentially rotating neutron stars and X-ray afterglows of short gamma-ray bursts*, contributed talk, GRB 2014 conference, Paris, France,

June 2014 (held by R. Ciolfi)

2014 *Explaining X-ray afterglows of short gamma-ray bursts*, Numerical Relativity Group Seminar, AEI, Potsdam, Germany, May 2014

2013 *Electromagnetic counterparts to binary neutron star mergers: the role of hypermassive neutron stars*, contributed talk, 27th Texas Symposium on Relativistic Astrophysics, Dallas, Texas, Dec. 2013

2013 *The magnetorotational instability in hypermassive neutron stars*, contributed talk, International workshop on Neutron Stars: Nuclear Physics, Gravitational Waves and Astronomy, Univ. of Surrey, UK, July 2013

2013 *The magnetorotational instability in hypermassive neutron stars*, contributed talk, Karl Schwarzschild Meeting, Frankfurt, Germany (awarded Karl Schwarzschild Prize), July 2013

2013 *Magnetized accretion disks and relativistic jets*, review talk, Numerical Relativity Group Seminar, AEI, Potsdam, Germany, May 2013

2013 *On the magnetorotational instability in hypermassive neutron stars*, contributed talk, 3rd Iberian Gravitational Wave Meeting, Valencia, Spain, March 2013

2013 *Evolution of magnetized hypermassive neutron stars*, contributed talk, Spring Meeting of the German Physical Society, Jena, Germany, Feb. 2013

2013 *The magnetorotational instability in hypermassive neutron stars*, Numerical Relativity Group Seminar, AEI, Potsdam, Germany, Jan. 2013

2012 *An upper limit from asteroseismology on the stochastic background of gravitational waves*, contributed talk, The Modern Era of Helio- and Asteroseismology, ESF conference, Obergurgl, Austria, May 2012

2012 *First upper bounds on a background of gravitational waves from helio- and asteroseismology*, Institute Seminar, Kiepenheuer Institute for Solar Physics, Freiburg, Germany, Jan. 2012

2010 *Excitation of nonradial stellar oscillations by gravitational waves*, Institute Seminar, Kiepenheuer Institute for Solar Physics, Freiburg, Germany, June 2010