

EMANUELE BERTI - CURRICULUM VITAE - JUNE 20, 2018

PERSONAL DATA

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Personal webpage:	http://www.phy.olemiss.edu/~berti/
Group webpage:	http://www.phy.olemiss.edu/GR/
Languages:	Italian (native), English (fluent), Greek, French (good communication skills)

CURRENT POSITIONS

Starting 7/1/2018	Professor Johns Hopkins University, Baltimore, MD
7/1/2014–6/30/2018	Associate Professor (with Tenure) University of Mississippi, Oxford, MS
1/1/2018–6/30/2018	Research Professor Johns Hopkins University, Baltimore, MD

PREVIOUS POSITIONS

6/1/2015–8/31/2017	FCT Consolidator Award (Full Research Professorship) Instituto Superior Técnico, Lisbon, Portugal
5/15/2010–5/14/2016	Visiting Associate Professor California Institute of Technology, Pasadena, CA
1/21/2009–6/30/2014	Assistant Professor University of Mississippi, Oxford, MS
8/27/2007–1/20/2009	NASA ORAU Senior Post-doctoral Fellow , Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA (USA).
9/1/2006–8/31/2007	Research Scientist , McDonnell Center for the Space Sciences, Department of Physics, Washington University, Saint Louis, MO (USA). Position supported by NASA Grant NNG06GI60 (<i>General Relativity, Inspiralling Compact Binaries and LISA</i>).
10/1/2003–8/31/2006	Post-doctoral position with Prof. Clifford M. Will. In 2003-2004 I worked in the Groupe de Cosmologie et Gravitation (GR ϵ CO), Institut d'Astrophysique de Paris. On 9/1/2004 I moved to Saint Louis.
11/11/2001–9/30/2003	Post-doctoral position at the Aristotle University of Thessaloniki (local coordinator: Prof. Kostas D. Kokkotas) within the European Network on <i>Gravitational Wave Astronomy</i> .

EDUCATION

1/28/2002	PhD in Astrophysics , University of Rome <i>La Sapienza</i> . Supervisor: Prof. Valeria Ferrari. My PhD thesis is online at http://www.phy.olemiss.edu/~berti/research/phd.pdf
10/30/1998	Laurea degree in Theoretical Physics (Laurea in Fisica), University of Rome <i>La Sapienza</i> , Full marks <i>cum laude</i> (110/110 e lode). Supervisors: Prof. Valeria Ferrari, Dr. Omar Benhar. My Laurea thesis (in Italian) is online at http://www.phy.olemiss.edu/~berti/research/laurea.pdf
1993	High school diploma (maturità classica), Liceo Classico M. Buratti (Viterbo), Full marks (60/60).

COMPUTING KNOWLEDGE

Programming languages:	C++, C, Fortran, HTML...
Scientific software:	Maple, Mathematica, MATLAB, Gnuplot, XMGrace, Origin, IDL...
Operating systems:	UNIX, Linux, Windows, Mac OS X

Current and past support

Current support as PI

- PI of the NASA ATP Grant 17-ATP17-0047 *Exploring Extreme Gravity with LISA: Developing a Science Case for Tests of General Relativity* (8/1/2018-7/31/2021). Co-PI: Nicolas Yunes (Montana State University). Total award amount: \$815,554.
- PI of the NSF Grant AST-1716715 *Understanding Compact Binary Formation With The First Gravitational Wave Detections* (7/1/2017-6/30/2020), Co-PI: Bangalore Sathyaprakash (Penn State University & Cardiff). Total award amount (University of Mississippi): \$318,810.
- PI of the NSF Grant PHY-1607130 *Physics and Astrophysics of Compact Binaries* (9/1/2016-8/31/2019). Total award amount: \$315,000.
- PI of the University of Mississippi Office of Research and Sponsored Programs Investment Grant *An International Graduate Program in Gravitational Physics*. Total award amount: \$7,000.

Current support as Co-PI or collaborator

- *Strong Gravity and High Energy Physics* Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE) Action, funded by the EU Horizon 2020 program H2020-MSCA-RISE-2015. Coordinator: U. Sperhake. PIs: E. Barausse, E. Berti, V. Cardoso, L. Gualtieri, C. Herdeiro, A. Ishibashi, L. Lehner and U. Sperhake (2015-2020). € 288,000.
- Co-PI of the project *High energy grazing collisions of black holes* (PHY-090003) together with Ulrich Sperhake (PI), Vitor Cardoso and Frans Pretorius. The project was awarded a total of over 12 million CPU hours by the TeraGrid Resource Allocations Committee T-RAC (now XSEDE) for the period Jan 1 2009-Dec 31 2017.

Sponsor of Visitor Grants/Travel Awards

- Sponsor for a Fulbright Fellowship to visit the University of Mississippi, awarded to Professor Mauricio Richartz (Federal University of ABC, São Paulo, Brazil).
- US sponsor for an American Physical Society International Travel Award to visit the University of Mississippi, awarded to Caio F. B. Macedo (Universidade Federal do Pará, Belém, Brazil). Total award amount: \$2,000.

Past support as PI

- Research funds for FCT Consolidator Award at the Instituto Superior Técnico, Lisbon, Portugal (6/1/2015–8/31/2017). Total award amount: € 50,000.
- PI of the NSF Faculty Early Career Development (CAREER) Grant PHY-1055103 *CAREER: Physics and Astrophysics of Compact Binaries* (9/1/2011-8/31/2016). Total award amount: \$460,000.
- *Numerical Relativity and High Energy Physics*, International Research Staff Exchange Scheme (IRSES), awarded by the European Union under the FP7 programme. Coordinator: C. Herdeiro. PIs: E. Berti, V. Cardoso, L. C. B. Crispino, L. Gualtieri, C. Herdeiro and U. Sperhake (2012-2015). € 318,000.
- PI of the NSF Grant PHY-0900735 *Gravitational waves from black hole binaries: modeling, astrophysics and strong-field tests* (9/1/2009-8/31/2012). Total award amount: \$150,000.
- Oak Ridge Associated Universities (ORAU) Event Sponsorship Program Support for the Seventh Gulf Coast Gravity Meeting held at the University of Mississippi, Oxford (MS), April 19-20 2013. Total award amount: \$2,000.
- College of Liberal Arts Summer Research Grant (Summer 2012). Total award amount: \$7,500.

Past support as Co-PI or collaborator

- Co-I of the project *Black hole dynamics in alternative theories of gravity*, 2011, Project AECT-2011-2-0015. Grant amount: 100k CPU hours on the Barcelona Supercomputing Center.
- Co-PI of the German SFB project *Improving Advanced LIGO/Virgo event rate estimates for compact binary mergers* (SFB PI: Luciano Rezzolla) together with Krzysztof Belczynski, Michal Dominik, Francesco Pannarale and Jocelyn Read. Grant amount: € 10,000.
- Member of the research team for the project *Strong curvature corrections to General Relativity: consequences for astro- and particle physics*, 2012/2013, CERN/FP/123593/2011. Grant amount: € 10,000.
- Member of the research team for the project *Astrophysics and fundamental physics with gravitational wave detectors*, 2009, Project FCT PTDC/FIS/098032/2008. Grant amount: € 95,000.
- Member of the research team for the project *Numerical Relativity and the AdS/CFT correspondence*, 2009, Project FCT PTDC/FIS/098025/2008. Grant amount: € 110,000.
- Member of the research team for the project *Instrumentação de segunda geração do Very Large Telescope Interferometer*, 2008, Project FCT PTDC/CTE-AST/098034/2008. Grant amount: € 196,560.
- Member of the research team for the project *Astrophysics and fundamental physics with gravitational wave detectors*, 2008, Project FCT PTDC/FIS/098032/2008. Grant amount: € 95,000.
- Member of the research team for the project *Phenomenology of gravitational events in LHC*, 2007, Project FCT POCI/FP/81915/2007. Grant amount: € 25,000.
- Member of the research team for the project *Gravitational waves: emission and detection*, 2007, Project FCT PTDC/FIS/64175/2006. Grant amount: € 100,380.

Awards/Professional Recognition

- Elected **Fellow of the American Physical Society** (2015) with the following citation:
“For important contributions to theoretical gravitational-wave physics, including quasi-normal modes of black holes, tests of alternative theories, the links between analytic and numerical relativity, and the astrophysics of merging black holes.”
- Elected to the **Chair Line of the American Physical Society’s Division of Gravitational Physics** (February 2016). Currently serving as Chair Elect.
- **Member of the Editorial Board of *Physical Review Letters*** as Divisional Associate Editor in Gravitational Physics (2/1/2017-1/31/2020).
- **University of Mississippi College of Liberal Arts Inaugural Research, Scholarship, and Creative Achievement Award** (2017). See the article in the [University’s news website](#).
- Italian Habilitation (Abilitazione Scientifica Nazionale) for a Full Professorship in Theoretical Physics and Astrophysics (3/28/2017–3/28/2023).
- IOP Outstanding Reviewer Award “for the high quality and timeliness of your reviews for Classical and Quantum Gravity” (2016).
- American Physical Society Outstanding Referee Award (2011).
- Elected Member of the Nominating Committee of the International Society on General Relativity and Gravitation (the election took place at the GR20 Conference in Warsaw, July 2013).
- Finalist of the 2013 ISSNAF Award for Young Investigators (an award for Italian scientists under the age of 40 working in North America). I was one of 7 finalists in the combined fields of Astrophysics, Physics, Chemistry and Mathematics (and one of 29 finalists in total, for a single award that encompassed also Environmental Sciences, Cognitive and Behavioral Neuroscience, and Biomedicine).
- Listed online among the “[Top Italian Scientists](#)” (sorted by h -index).
- NASA ORAU Senior Post-doctoral Fellowship, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California (8/27/2007–1/20/2009).
- Research Scientist at the McDonnell Center for the Space Sciences, Department of Physics, Washington University, Saint Louis, Missouri (USA). Position supported by NASA Grant NNG06GI60 (*General Relativity, Inspiralling Compact Binaries and LISA*) awarded to Prof. Clifford M. Will at Washington University in Saint Louis (9/1/2006–8/31/2007).
- Ranked first nationwide in Theoretical Physics in a competition for post-graduate grant awards from the Italian National Institute for Nuclear Physics (INFN) in 1999.
- Tuition waiver for high GPA (awarded every year when I was an undergraduate in Rome).
- Best high-school student award (*Premio Rotary Viterbo Scuola*) (1993).

Other scientific activities

- Contract with the Italian Encyclopedia *Treccani* as a scientific reviewer of papers on neural networks for a monograph on Biology (*Frontiere della Vita*) whose Advisory Board included four Nobel prize laureates: Rita Levi Montalcini, David Baltimore, Renato Dulbecco and Francois Jacob. I reviewed papers on neural networks for a volume coordinated by Giorgio Parisi and Daniel Amit (December 1998–June 1999).

Membership in professional societies

- Fellow of the American Physical Society and member of the Division of Gravitational Physics.
- Elected to the Chair Line of the American Physical Society's Division of Gravitational Physics (February 2016). Currently serving as Chair Elect.
- Member of the Nominating Committee for the APS Topical Group in Gravitation (2011–2012): see <http://www.aps.org/units/ggr/governance/committees/index.cfm>
- Member of the Physics & Engineering Advisory Council of the Mississippi Academy of Sciences.
- Member of the LISA Science Group (LSG) in charge of the "Interpretation/key science projects" work package group.
- Selected as a member of NASA's U.S. LISA Study Team (2017-2020).
- Selected as a member of NASA's eLISA L3 Study Team (2016-2017). The purpose of the L3 Study was to understand how NASA might participate in ESA's L3 gravitational wave mission, to inform NASA's engagement through the mission's earliest stages, and to prepare for the 2020 decadal survey.
- Member of the eLISA/NGO Science Performance Evaluation Taskforce, and previously of the taskforce on LISA Science Performance Evaluation (by Parameter Estimation): see <https://lisa-light.aei.mpg.de/bin/view/Main/WebHome>
- Member of the Science Taskforce for the NASA Physics of the Cosmos Gravitational-Wave Mission Concept Study Final Report: see <http://pcos.gsfc.nasa.gov/>
http://pcos.gsfc.nasa.gov/phypag/GW_Study_Rev3_Aug2012-Final.pdf
- Convener of the "Black holes" working group of the NASA Gravitational Wave Science Analysis Group (GWSAG).
- Contributor to the white paper *The gravitational universe*, submitted for the L2/L3 selection of the European Space Agency's Cosmic Vision program (2013) (see <http://arxiv.org/abs/1305.5720>).

Data/software sharing

- Made available numerical data and Mathematica notebooks to compute quasinormal mode frequencies, their angular mixing and their excitation coefficients:
<http://www.phy.olemiss.edu/~berti/ringdown/>
- Made available (i) Mathematica notebooks to compute the gravitational-wave amplitude of black hole-neutron star mergers (in collaboration with Pannarale, Kyutoku and Shibata), slowly rotating neutron star models in scalar-tensor theories (in collaboration with Pani), and (ii) numerical data on various topics (cumulative distribution functions for multiple gravitational-wave detector networks, hairy black hole solutions...): see <http://www.phy.olemiss.edu/~berti/research/>
- Made available a Mathematica notebook to compute analytical approximations to the exterior metric of rapidly rotating neutron stars:
<http://www.astro.auth.gr/~niksterg/projects/BertiStergioulas/>

Conference organization

- *American Physical Society's April Meeting ("Quarks To Cosmos")*
Columbus (OH), April 14-17, 2018.
As Chair Elect of the American Physical Society's Division of Gravitational Physics (DGRAV), I was in charge of organizing the 39 sessions (including 13 invited sessions) sponsored by DGRAV.
<http://www.aps.org/meetings/april/about.cfm>
- *Strong Gravity and Binary Dynamics with Gravitational Wave Observations (principal organizer)*
University of Mississippi, Oxford (MS), February 27-March 2, 2017.
<http://www.phy.olemiss.edu/StronGBaD/>
- *Unifying Tests of General Relativity Burke Institute Workshop (co-organizer)*
California Institute of Technology, Pasadena (CA), July 19-21, 2016.
Organizing Committee:
Emanuele Berti, Phil Bull, Sean Carroll, Yanbei Chen, Olivier Doré, Jérôme Gleyzes, Leo C. Stein.
<http://www.tapir.caltech.edu/~unifying-gr-tests/>
- *Testing General Relativity with Astrophysical Observations (principal organizer)*
University of Mississippi, Oxford (MS), January 6-10 2014.
<http://www.phy.olemiss.edu/TestGR2014/>
- *Seventh Gulf Coast Gravity Meeting (principal organizer)*
University of Mississippi, Oxford (MS), April 19-20 2013.
<http://www.phy.olemiss.edu/GCGM7/>
- *LISA Symposium X (member of SOC)*
University of Florida, Gainesville, May 19-23 2014.
<http://www.phys.ufl.edu/lisasymposiumx/>
- *Gravitational Waves: Revolution in Astronomy and Astrophysics*
Yukawa Institute for Theoretical Physics, Kyoto University (Japan), May 26-Jun 14 2013.
<http://www2.yukawa.kyoto-u.ac.jp/ws/2013/ykis2013/conference/conference.php>
- *Science from the First Gravitational Wave Detections*
South Padre Island (TX), May 20-24 2013.
<http://www.syntheticuniverse.org/html2/spi.html>
- *NR meets 3PN (A Workshop on the Interface between Post-Newtonian Theory and Numerical Relativity)*
Washington University in Saint Louis, February 8-11 2007.
<http://nrm3pn.wustl.edu>
- *16th Midwest Relativity Meeting*
Washington University in Saint Louis, November 17-18 2006.
<http://mwrn.wustl.edu/>
- *NEB-X (10th Hellenic Relativity Conference)*
Peninsula of Cassandra (Chalkidiki, Greece), May 30-June 2 2002.
http://www.astro.auth.gr/gravity/NEB_X.html

Teaching experience

The following is a list of classes I taught so far. With the exception of the classes I taught before 2009, when I was a PhD student or a postdoc, I was the principal instructor for all courses.

Classes taught at the University of Mississippi:

2008/2009 (Spring): **Phys 308** (*Mathematical Physics*, undergraduate).

2008/2009 (Spring): **Phys 510** (*Research Seminar*, graduate).

2009/2010 (Fall): **Phys 551** (*Theoretical Physics I*, undergraduate/graduate).

2009/2010 (Fall): **Phys 510** (*Research Seminar*, graduate).

2009/2010 (Spring): **Phys 552** (*Theoretical Physics II*, undergraduate/graduate).

2009/2010 (Spring): **Phys 510** (*Research Seminar*, graduate).

2009/2010 (Spring): **Phys 629** (*Gravitation and Cosmology*, undergraduate/graduate).

2010/2011 (Fall): **Phys 211/221** (*Physics for Science and Engineering I*, undergraduate).

2010/2011 (Fall): **Phys 551** (*Mathematical Methods of Physics I*, undergraduate/graduate).

2010/2011 (Spring): **Phys 552** (*Mathematical Methods of Physics II*, undergraduate/graduate).

2011/2012 (Fall): **Phys 211/221** (*Physics for Science and Engineering I*, undergraduate).

2011/2012 (Fall): **Phys 551** (*Mathematical Methods of Physics I*, undergraduate/graduate).

2011/2012 (Spring): **Phys 552** (*Mathematical Methods of Physics II*, undergraduate/graduate).

2012/2013 (Fall): **Phys 551** (*Mathematical Methods of Physics I*, undergraduate/graduate).

2012/2013 (Spring): **Phys 552** (*Mathematical Methods of Physics II*, undergraduate/graduate).

2013/2014 (Fall): **Phys 551** (*Mathematical Methods of Physics I*, undergraduate/graduate).

2013/2014 (Spring): **Phys 552** (*Mathematical Methods of Physics II*, undergraduate/graduate).

2013/2014 (Spring): **Phys 629/630** (*Advanced Gravitational Physics*, graduate).

2014/2015 (Fall): **Phys 651** (*Mathematical Methods of Physics I*, undergraduate/graduate).

2014/2015 (Spring): **Phys 652** (*Mathematical Methods of Physics II*, undergraduate/graduate).

2016/2017 (Spring): **Phys 308** (*Mathematical Physics*, undergraduate).

2016/2017 (Fall): **Phys 709** (*Advanced Mechanics I*, graduate).

2017/2018 (Fall): **Phys 709** (*Advanced Mechanics I*, graduate).

2017/2018 (Spring): **Phys 750** (*Advanced Gravitational Physics*, graduate).

Classroom materials for my current classes, including syllabi, homework problems, midterm problems and solutions, are available on my homepage: <http://www.phy.olemiss.edu/~berti/>

Classes taught as a PhD student/postdoc:

1999/2000: **Physics for Biologists** (mechanics, thermodynamics and electromagnetism), University of Rome “La Sapienza” (with Valeria Ferrari).

2000/2001: **Physics for Biologists** (mechanics, thermodynamics and electromagnetism), University of Rome “La Sapienza” (with Valeria Ferrari).

2006/2007: **Physics 478** (*From Black Holes to the Big Bang* for undergraduates), Washington University in Saint Louis (instructor: Clifford M. Will). I taught classes on Kerr black holes and gravitational radiation.

Schools

- Invited lecture on “Black Hole Theory” at the international physics school for Ph.D. students and post-docs *General Relativity @99* (September 14-19, 2014) organized by Gerhard Schaefer and Clifford Will at the Physikzentrum Bad Honnef (Germany). The school involved about 20 lecturers and attracted about 80 students and postdocs, together with some scientists. My lecture notes for the school are available on the arXiv (see [L1] in my publication list).

- Invited lectures at the Summer School on Gravitational-Wave Astronomy organized by the International Center for Theoretical Sciences (Bangalore, India):

<https://www.icts.res.in/program/gws2016>

The two-week school (7/25/2016-8/5/2016) consisted of three graduate-level courses in gravitational-wave physics delivered by Clifford M. Will, Bangalore S. Sathyaprakash and myself. Lecture notes and supporting materials (including several Mathematica notebooks) are available at this URL:

<https://www.icts.res.in/event/page/3071>

Supervision of students and postdocs

My group in Mississippi has several international collaborations including groups in Europe, the US, Canada, Japan and Brazil. These collaborations were previously funded through the European Union's International Research Staff Exchange Scheme (IRSES) award from the FP7 programme, and they are currently funded through a Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE) Action: see section "Grants as Co-PI or collaborator" for details. These grants allow exchanges of students and postdocs between different institutions.

I (co)supervised, or I am presently (co)supervising, the following students and postdocs (I highlight in red/boldface those that are presently under my supervision, and in blue/italic those that are presently under my cosupervision):

Undergraduate/master students:

Giuseppe Lavagetto (graduated with Valeria Ferrari, Rome, 2000)

Giorgio Corsetti (graduated with Valeria Ferrari, Rome, 2000)

Madalena Lemos (graduated with Vitor Cardoso, Lisbon, 2010)

Barnabas Kipapa (University of Mississippi)

Davide Gerosa (supervised as LIGO REU Student visiting Caltech from the University of Milan, Italy in the Summer 2012, and as a visiting student at the University of Mississippi); obtained a Master *full marks cum laude* on 4/9/2013 at the University of Milan (Italy) under the joint supervision of myself and Prof. Giuseppe Lodato (Milan). PhD with Ulrich Sperhake at DAMTP, Cambridge (UK). Now Einstein Fellow at the California Institute of Technology.

Justin Alsing (supervised as LIGO REU Student visiting Caltech from Oxford, UK in the Summer 2011; PhD at Imperial College London under the supervision of Alan Heavens and Andrew Jaffe)

Zhongyang Zhang (University of Mississippi), graduated 2013

Graduate students:

Asimina Maniopoulou (graduated with Nils Andersson, University of Southampton, 2004)

Frances White (graduated with Marco Bruni, University of Portsmouth, 2004)

Michal Dominik (with Krzysztof Belczynski, University of Warsaw, Poland)

Hector Okada da Silva (University of Mississippi), Ph.D. 2017, postdoc with Nico Yunes (Montana State University) starting in the Fall 2017

Vishal Baibhav (University of Mississippi/Instituto Superior Técnico, Lisbon)

Shrobona Ghosh (University of Mississippi)

Akshay Khadse (University of Mississippi)

Lorena Magaña-Zertuche (University of Mississippi)

Sashwat Tanay (University of Mississippi)

Postdocs:

Sayan Chakrabarti (cosupervised with Vitor Cardoso, IST Lisbon, Portugal)

Paolo Pani (cosupervised with Vitor Cardoso, IST Lisbon, Portugal)

Jocelyn Read (University of Mississippi, 2010-2012)

Michael Horbatsch (University of Mississippi, 2012-2014)

Antoine Klein (University of Mississippi, Dec 2013-Apr 2016; IST Lisbon, May 2016-Aug 2016)

Atsushi Nishizawa (University of Mississippi, Feb 2016-Dec 2016)

George Pappas (University of Mississippi, Aug 2015-Jul 2016; IST Lisbon, Sep 2016-Aug 2018)

Referee

Referee for the following journals:

Science, Nature, Physical Review X, Physical Review Letters, Physical Review D, Classical and Quantum Gravity, Astrophysical Journal (Letters), Monthly Notices of the Royal Astronomical Society (Letters), Journal of High Energy Physics, General Relativity and Gravitation, Physics Reports, Reviews of Modern Physics, Physics Letters B, New Journal of Physics, International Journal of Modern Physics D, Canadian Journal of Physics, Modern Physics Letters A, Journal of Physics G: Nuclear and Particle Physics, Central European Journal of Physics, Physica Scripta, European Physical Journal C, Astrophysics and Space Science, Advances in Mathematical Physics, Journal of Physics: Conference Series, Communications in Computational Physics, Nuclear Physics B, Journal of Cosmology and Astroparticle Physics

In 2011 I was selected as an **APS Outstanding Referee** by the editors of *Physical Review* and *Physical Review Letters*.

In 2016 I received the **IOP Outstanding Reviewer Award** “for the high quality and timeliness of your reviews for *Classical and Quantum Gravity*”:

Editor

Member of the Editorial Board (Divisional Associate Editor in Gravitational Physics) of *Physical Review Letters* (2/1/2017-1/31/2020).

Associate Editor of *General Relativity and Gravitation* (2014-2019).

Guest Editor for the *General Relativity and Gravitation* Topical Collection

“Testing the Kerr spacetime with gravitational-wave and electromagnetic observations”.

Book Reviewer

I reviewed various book proposals for Cambridge University Press and Springer.

Grant Proposal/Fellowship Reviewer

National Science Foundation (NSF, USA)

National Aeronautics and Space Administration (NASA, USA)

Natural Sciences and Engineering Research Council of Canada (NSERC, Canada)

Science and Technology Facilities Council (STFC, UK)

Deutsche Forschungsgemeinschaft (DFG, Germany)

Agence Nationale de la Recherche (ANR, France)

Netherlands Foundation for Fundamental Research on Matter (FOM, Netherlands)

Netherlands Organisation for Scientific Research (NWO, Netherlands)

Einstein Fellowship Committee Member (2011/2012)

Talks

2018

- *Strong gravity and astrophysics with compact binaries at the dawn of gravitational-wave astronomy*, Colloquium at the Department of Physics and Astronomy, The University of Mississippi, Oxford (MS), 5/1/2018.
- *Gravitational wave searches for ultralight bosons with LIGO and LISA*, April APS Meeting, Columbus (OH), 4/15/2018.
- *Gravitational wave searches for ultralight bosons with LIGO and LISA*, April APS Meeting, Columbus (OH), 4/15/2018.
- *What will LISA reveal about black hole astrophysics?*, Gravitational Wave SIG Minisymposium, April APS Meeting, Columbus (OH), 4/14/2018.
- *Gravitational wave astronomy, strong gravity and new physics*, YKIS2018a Symposium “General relativity: The next generation”, Yukawa Institute for Theoretical Physics, Kyoto (Japan), 2/23/2018.

2017

- *Spin precession, spin-orbit resonances, spin alignment and (stellar mass) BH binary formation*, “Astrophysics of Gravitational Radiation Sources and Multimessenger Astronomy in the Era of LIGO Detections” workshop, Aspen Center For Physics, 7/19/2017.
- Coordinator (with Carlos Sopena) of the discussion session *Future of gravitational wave detections*, “Strong Gravity Universe” workshop, São Miguel (Azores), 7/3/2017.
- *Strong gravity tests and searches for new physics with gravitational wave detectors*, Invited talk at the European Week of Astronomy and Space Science (EWASS), Prague (Czech Republic), 6/27/2017.
- *Gravitational waves after the first detections*, Round table coordinator at the workshop “New Frontiers in Gravitational Wave Astrophysics”, Rome “Sapienza” (Italy), 6/19/2017.
- *Tests of strong gravity and new physics with gravitational waves*, Invited colloquium, DAMTP/CMS, Cambridge (UK), 5/31/2017.
- *Testing the Kerr paradigm with gravitational wave observations*, Invited talk at the Black Hole Initiative Conference, Harvard University, Cambridge (MA), 5/8/2017.
- *Astrophysics, tests of strong gravity and new physics with gravitational-wave astronomy*, Portsmouth (UK), 4/18/2017.
- *Tests of strong gravity and new physics with gravitational-wave astronomy*, Johns Hopkins University, Baltimore (MD), 2/13/2017.
- *Constraining stellar binary black hole formation scenarios with LISA eccentricity measurements*, APS April Meeting, Washington DC, 1/30/2017.
- *Spectroscopy of Kerr black holes with Earth- and space-based interferometers*, APS April Meeting, Washington DC, 1/29/2017.

2016

- Coordinator (with Paolo Pani) of the discussion session *Testing the Black Hole Paradigm with Gravitational Waves* at the “GW161212: The Universe through gravitational waves” workshop, Simons Center for Geometry and Physics (NY), 12/14/16.

- *Strong gravity and astrophysics with compact binaries at the dawn of gravitational-wave astronomy*, Invited Theory Seminar, Columbia University (New York), 12/5/2016.
- Member of the discussion panel *TG1 - Testing Gravity* at the “Physics and Astrophysics at the eXtreme” (PAX) workshop, State College (PA), 12/1/2016.
- *Black holes and gravitational waves (we did it!)*, Outreach Talk at Alcorn State University, Alcorn (MS), 10/20/2016.
- *Complementarity of Earth- and space-based detectors: binary populations and tests of strong gravity*, GR21, Columbia University, New York, 7/13/2016.
- *Strong gravity and astrophysics with compact binaries at the dawn of gravitational-wave astronomy*, Invited talk, Southampton (UK), 6/2/2016.
- *Strong gravity and astrophysics with compact binaries at the dawn of gravitational-wave astronomy*, Invited talk, Institute of Cosmology and Gravitation, Portsmouth (UK), 6/1/2016.
- *Tests of modified gravity with gravitational-wave observations*, Group meeting talk, Institute of Cosmology and Gravitation, Portsmouth (UK), 6/1/2016.
- *Ultrarelativistic unequal-mass black hole collisions*, APS April Meeting, Salt Lake City (UT), 4/18/2016.
- *Alternative theories of gravity, novel physics around compact objects*, Invited Talk and Discussion Session coordination, GR100++ Workshop, Princeton (NJ), 4/8/2016.

2015

- *Tests of strong gravity with compact objects*, Invited TAPIR Seminar, California Institute of Technology, Pasadena (CA), 10/16/2015.
- *Gravity, black holes, gravitational waves and all that*, Outreach Talk at Mississippi Delta Community College, Oxford (MS), 9/30/2015.
- *Astrophysical tests of general relativity*, Invited Talk at the workshop “Gravity @ all scales”, Nottingham (UK), 8/24/15.
- *New frontiers in scalar-tensor theory*, Discussion Session coordinator, IVth NRHEP Network Meeting, Physics Department, University of Rome “Sapienza”, Rome (Italy), 7/9/15.
- *Astrophysical tests of general relativity*, Invited Colloquium at the Physics Department, University of Rome “Sapienza”, Rome (Italy), 7/8/15.
- *Gravitational waves and tests of general relativity*, Invited Lecture at the 8th Aegean Summer School “Gravitational Waves: From Theory to Observations”, Rethymno (Greece), 6/29/15.
- *Neutron stars as probes of strong-field gravity*, Invited Talk at the workshop “One Hundred Years of Strong Gravity”, Instituto Superior Técnico, Lisbon (Portugal), 6/12/15.
- *Spontaneous scalarization: dead or alive?*, April APS Meeting, Baltimore (MD), 4/11/15.
- *Black Holes*, Outreach Talk at Mississippi Delta Community College, Moorhead (MS), 3/16/2015.
- *Gravitational Waves*, Outreach Talk at Mississippi Delta Community College, Moorhead (MS), 3/16/2015.
- *Tests of strong gravity: what will astrophysics ever do for us?*, Invited talk at the workshop “Compact Objects as Astrophysical and Gravitational Probes”, Leiden (Netherlands), 2/4/15.

2014

- *A black hole theory primer: Particles, waves, critical phenomena and superradiant instabilities*,
Invited Lecture at the DPG Physics School on General Relativity @ 99 (Bad Honnef, Germany), 9/16/14.
Lecture notes available online at <http://www.phy.olemiss.edu/~berti/BadHonnef.pdf>
(and also as arXiv:1410.4481)
- *Testing strong-field gravity with space-based detectors*,
LISA Symposium X (Gainesville, Florida), 5/21/14.
- *Fundamental physics and astrophysics of compact-binary mergers*,
558th WE-Heraeus-Seminar “The Strong Gravity Regime of Black Holes and Neutron Stars”,
Physikzentrum Bad Honnef (Germany), 4/4/14.
- *Fundamental physics and astrophysics of compact-binary mergers*,
Invited Colloquium, SISSA, Trieste (Italy), 3/11/14.

2013

- *Physics and astrophysics with gravitational-wave observations: opportunities and challenges*,
Group Meeting Presentation, Louisiana State University, Baton Rouge (LA), 11/8/13.
- *Physics and astrophysics with gravitational-wave observations*,
Invited Physics Colloquium, Louisiana State University, Baton Rouge (LA), 11/7/13.
- *Astrophysical tests of general relativity and fundamental physics*,
Meeting of the “Italian Scientists and Scholars in North America Foundation” (ISSNAF),
Italian Embassy, Washington DC, 10/29/2013.
- *Black Holes and Gravitational Waves*,
Two Outreach Talks at Rust College, Holly Springs (MS), 10/9/2013.
- *Compact objects as probes of gravitational physics*,
Yukawa Long-term Workshop (*Gravitational Waves and Numerical Relativity*),
Yukawa Institute for Theoretical Physics, Kyoto (Japan), 6/17/2013.
- *(Astro)physics with the first gravitational-wave detections*,
Yukawa International Seminar 2013 (*Gravitational Waves: Revolution in Astronomy and Astrophysics*),
Yukawa Institute for Theoretical Physics, Kyoto (Japan), 6/6/2013.
- *Gravitational Waves as a probe of fundamental physics*,
NASA Astrophysics Roadmap Town Hall Meeting, 5/6/2013.
- *Spin alignment as a diagnostic of black-hole binary formation*,
7th Gulf Coast Gravity Meeting, Oxford (MS), 4/19/2013.
- *Black holes and gravitational waves: theory and experiments*,
Boeing Distinguished Research and Scholar Seminar (b-DRASS), El Segundo (CA), 1/9/2013.

2012

- *Astrophysical Tests of General Relativity in the Strong-Field Regime*,
Plenary Talk at the 26th Texas Symposium on Relativistic Astrophysics, São Paulo (Brazil), 12/18/2012.
- *Black Holes*,
Outreach Talk at Jackson State University, Jackson (MS), 11/8/2012.
- *Gravitational Waves*,
Outreach Talk at Jackson State University, Jackson (MS), 10/18/2012.
- Member (with Chad Hanna, Andrew MacFadyen, Larry Price and Alicia Soderberg) of the Discussion Panel at the Workshop *Rattle and Shine: Gravitational Wave and Electromagnetic Studies of Compact*

- Binary Mergers*, Kavli Institute for Theoretical Physics, Santa Barbara (CA), 7/30/2012-8/3/2012.
- *Astrophysical tests of general relativity and black hole bombs*,
NEB 15 (Recent Developments in Gravity),
Technological Educational Institute of Crete, Chania (Greece), 6/20/2012.
 - *Testing general relativity with black hole quasinormal modes and massive scalar-tensor theories*,
Harvard Sackler Conference (Seventh Harvard-Smithsonian Conference on Theoretical Astrophysics)
on Testing General Relativity with Astrophysical Systems, Boston (MA), 5/16/2012.
 - *Modified gravity and scalar fields: where should we look?*,
April APS Meeting, Atlanta (GA), 4/1/2012.
 - *Black Holes*,
Outreach Talk at Tougaloo College (MS), 3/26/2012.
 - *Gravitational Waves*,
Outreach Talk at Tougaloo College (MS), 3/19/2012.

2011

- *New adventures in testing Einstein's general relativity*,
Department of Physics and Astronomy, University of Alabama, Tuscaloosa (Alabama), 10/19/2011.
- *New LISA: what's new?*,
Institute of Space Sciences (CSIC-IEEC), Campus UAB, Barcelona (Spain), 7/28/2011.
- *A census of massive black holes with space-based gravitational-wave detectors*
(or: *Reports of LISA's death are greatly exaggerated*),
TAPIR Group Meeting, California Institute of Technology, Pasadena (CA), 5/19/2011.
- *A census of massive black holes with space-based gravitational-wave detectors*
(or: *Reports of LISA's death are greatly exaggerated*),
6th Gulf Coast Gravity Meeting, Florida Atlantic University, Boca Raton (FL), 5/15/2011.

2010

- *Physics and astrophysics of compact binaries: present and future*,
Pará University, Belém (Brazil), 12/20/10.
- *The interface between numerical relativity and data analysis: open problems*,
8th International LISA Symposium, Stanford University (CA), 7/1/10.
- Member (with Eric Poisson, Scott Hughes and Patrick Brady) of the Discussion Panel at the
Workshop *Theory Meets Data Analysis at Comparable and Extreme Mass Ratios (Capra+NRDA)*,
Perimeter Institute, Waterloo, Canada (7/20-26/10).

2009

- *Spin as a tracer of massive black hole evolution*,
Astrophysics Seminar, UC Irvine (CA), 12/1/09.
- *Spin as a tracer of massive black hole evolution*,
NASA GSFC Astrophysics Science Division Colloquium,
Goddard Space Flight Center, Greenbelt (Maryland), 11/3/09.
- *Spin as a tracer of massive black hole evolution*,
Workshop on Massive Black Hole Binaries and Their Coalescence in Galactic Nuclei,
KIAA, Peking University, Beijing (China), 7/23/09.
- *Gravitational-wave spin measurements and massive black hole evolution*,

- CENTRA, Lisbon (Portugal), 7/9/09.
- *Gravitational waves from black hole mergers*, Multi-Messenger Relativistic Astrophysics 2009, Inaugural Conference of the Center for Relativistic Astrophysics, Georgia Tech, Atlanta (GA), 5/20/09.
 - *The gravitational and high-energy theory group at Ole Miss*, Presentation for the Society of Physics Students, The University of Mississippi, Oxford (MS), 3/5/09.

2008

- *Ultrarelativistic binary black hole mergers*, Relativistic Astrophysics Group Meeting, Jet Propulsion Laboratory, Pasadena (CA), 11/14/08.
- *Ultrarelativistic binary black hole mergers*, TAPIR Postdoc Lunch Talk, California Institute of Technology, Pasadena (CA), 11/12/08.
- *Cosmological black hole spin evolution by mergers and accretion: Implications for gravitational wave astronomy*, 2008 Theoretical Astrophysics in Southern California (TASC) Meeting, University of California at Irvine (CA), 10/24/08.
- *Gravitational wave astronomy and fundamental physics*, Colloquium at the Department of Physics, University of Guelph, Guelph (Canada), 5/21/08.
- *Gravitational wave astronomy*, Colloquium at the Department of Physics and Astronomy, The University of Mississippi, Oxford (MS), 4/18/08.
- *Post-Newtonian diagnostics for initial data*, invited talk at the April APS Meeting, Saint Louis (MO), 4/12-15/08.
- *Cosmological black hole spin evolution by mergers and accretion: Implications for gravitational wave astronomy*, High Energy Astrophysics Division (HEAD) Meeting of the American Astronomical Society, Los Angeles (CA), 3/31/08.
- *Linking numerical relativity to gravitational-wave astronomy*, Seminar at the Center for Computational Relativity and Gravitation, Rochester Institute of Technology, Rochester (New York), 3/7/08.
- *Synergy of analytical and numerical relativity: prospects for astrophysics and gravitational-wave detection*, Seminar at Washington University in Saint Louis (MO), 2/28/08.
- *Gravitational wave astronomy*, Colloquium at Washington University in Saint Louis (MO), 2/27/08.
- Coordinator (with Larry Kidder) of the discussion session on *Interfacing post-Newtonian theory, numerical relativity and perturbation theory* at the KITP Miniprogram *Interplay between Numerical Relativity and Data Analysis*, Kavli Institute for Theoretical Physics, Santa Barbara (CA), 1/7/08-1/18/08. See <http://www.kitp.ucsb.edu/activities/auto2/?id=944>

2007

- *Gravitational waves from binary black hole mergers: implications for astrophysics and fundamental physics*, Dipartimento di Fisica, Università di Roma “La Sapienza”, Rome (Italy), 12/19/07.
- *Black hole binary mergers and black hole spectroscopy*, CaJAGWR seminar, California Institute of Technology, Pasadena (CA), 4/12/07.
- *Post-Newtonian diagnosis of compact binary inspirals*, Relativistic Astrophysics group meeting, Jet Propulsion Laboratory, Pasadena (CA), 9/7/07.
- *Analytical insights into numerical simulations of compact binaries*, GRcCO seminar at the Institut d’Astrophysique de Paris (France), 7/26/07 and 7/27/07.
- *Gravitational waves from binary black hole mergers*, Institute for Astronomy and Astrophysics, Tübingen (Germany), 7/9/07.
- *The inspiral-merger-ringdown transition in unequal-mass black hole binaries*, NR meets 3PN (A Workshop on the Interface between Post-Newtonian Theory and Numerical Relativity), Washington University in Saint Louis (MO), 2/8/07–2/11/07.
- *Gravitational waves and alternative gravity theories*, Rethinking Gravity: From the Planck Scale to the size of the Universe, Tucson (AZ), 1/22/07–1/24/07.

2006

- *Gravitational wave astronomy*, Gravitational and High-Energy Theory Group, Oxford (MS), 10/10/06.
- *Gravitational wave astronomy*, Emerging Themes in Physics (Workshop for Young Scientists), Austin (TX), 10/5/06–10/6/2006.
- *Waveform models and parameter estimation for intermediate mass ratio inspirals*, LISA Astro-GR@AEI (EMRIs and IMRIs), Golm (Germany), 9/18/06–9/22/06.
- *Supermassive black hole (astro)physics and tests of general relativity with LISA*, Physikalisches-Astronomische Fakultät der Friedrich-Schiller-Universität, Jena (Germany), 9/14/06.
- *Measuring supermassive black hole parameters with LISA*, Physics and Astrophysics of Supermassive Black Holes, Santa Fe (New Mexico), 7/10/06–7/14/06.
- *Black hole spectroscopy with LISA*, 6th International LISA symposium, Goddard Space Flight Center, Greenbelt (Maryland), 6/19/06–6/23/2006.
- *Post-Newtonian diagnostic of compact binaries in quasiequilibrium*, Workshop on Astrophysical Applications of Numerical Relativity, Guanajuato (Mexico), 5/6/06–5/11/06.
- *Massive black hole mergers: waveform modelling and parameter estimation*, Workshop on Astrophysical Applications of Numerical Relativity, Guanajuato (Mexico), 5/6/06–5/11/06.
- *Tests of general relativity with LISA*, Politecnico di Torino (Italy), 1/12/06.
- *Tests of general relativity with LISA*, Dipartimento di Fisica dell’Università di Tor Vergata, Roma (Italy), 1/9/06.

2005

- *Supermassive black hole binaries*, 10th Gravitational Wave Data Analysis Workshop, Brownsville (TX), 12/15/05–12/18/05.
- *Taking black hole fingerprints with LISA*,

- Department of Physics and Astronomy, Louisiana State University, Baton Rouge (USA), 11/10/05.
- *The quasinormal spectrum of black holes*,
Center for Computation and Technology, Louisiana State University, Baton Rouge (USA), 11/8/05.
- *Testing general relativity with LISA*,
7th Astronomy Conference of the Hellenic Astronomical Society,
Lixourion, Kefallinia Island (Greece), 9/8/05–9/11/05.
- *Binary parameter estimation and detection of ringdown waves with LISA*,
Albert Einstein Century Conference, Paris (France), 7/18/05–7/22/05.
- *What will LISA tell us about black hole physics?*,
Black Holes V, Banff (Canada), 5/13/05–5/18/05.
- *Estimating spinning binary parameters and testing alternative theories of gravity with LISA*,
Center for Gravitational Physics and Geometry, Penn State University, State College (USA), 4/14/05.

2004

- *Black hole quasinormal modes and the area quantum*,
Quantum General Relativity session, GR17, Dublin (Ireland), 7/18/04–7/23/04.
- *Rotating neutron stars: an invariant comparison of approximate and numerical spacetime models*,
Relativistic Astrophysics session, GR17, Dublin (Ireland), 7/18/04–7/23/04.
- *Black hole quasinormal modes: recent developments and new applications*,
NEB-XI (11th Hellenic Relativity Conference), Department of Marine Sciences,
University of the Aegean, Lesbos (Greece), 6/2/04–6/5/04.
- *Black hole quasinormal modes: hints of quantum gravity?*,
Workshop on Dynamics and Thermodynamics of Black Holes and Naked Singularities,
Dipartimento di Matematica, Politecnico di Milano (Italy), 5/13/04–5/15/04.
- *Rotating relativistic stars and rotating black holes*,
Invited talk at the LUTH (Laboratoire de l'Univers et de ses Théories),
Observatoire de Paris-Meudon (France), 3/17/04.

2003

- *Black hole perturbation theory, the area quantum and large extra dimensions*,
GR ϵ CO seminar at the Institut d'Astrophysique de Paris (France), 10/30/03.
- *Black hole quasinormal modes and the area quantum*,
5th Meeting and Advanced School of the EU Network on *Sources of Gravitational Waves*,
Trieste (Italy), 9/15/03–9/26/03.
- *What do classical black hole oscillations tell us about their quantum properties?*,
Institute of Cosmology and Gravitation, Portsmouth (UK), 9/8/03.
- *Black hole oscillations and stability*,
Institute of Cosmology and Gravitation, Portsmouth (UK), 2/18/03.

2002

- *Towards the computation of quasinormal modes for rapidly rotating compact stars*,
4th Meeting of the EU Network on *Sources of Gravitational Waves*,
Palma de Mallorca (Spain), 9/26/02–9/28/02.
- *Gravitational waves from neutron star binaries*,
NEB-X (10th Hellenic Relativity Conference),

Peninsula of Cassandra (Chalkidiki, Greece), 5/30/02-6/2/02.

- *Gravitational waves from pulsating stars and stars in binary systems*, Aristotle University of Thessaloniki, 3/12/02.
- *Scattering processes in coalescing binary systems*, 3rd Meeting of the EU Network on *Sources of Gravitational Waves*, Southampton (England), 1/31/02-2/3/02.

2001

- *Perturbative formalisms for binary neutron stars*, 2nd Meeting of the EU Network on *Sources of Gravitational Waves*, Peninsula of Cassandra (Chalkidiki, Greece), 6/6/01-6/10/01.

2000

- *Gravitational waves emitted by binary systems*, Talk given on 11/29/00 during a two-week visit at Stony Brook University, New York, USA.
- *Gravitational waves emitted by extrasolar planetary systems*, Conference on *Gravitational waves: a challenge to Theoretical Astrophysics*, ICTP (International Center for Theoretical Physics), Trieste, Italy (Jun 2000).
- *Gravitational waves emitted by extrasolar planetary systems*, Conferenza Nazionale di Fisica Teorica, IIASS (International Institute for Advanced Scientific Studies), Vietri sul Mare (Salerno), Italy (Apr 2000).

Publications

My papers are listed in chronological order. At the time of writing, according to Google Scholar, they collected over 9900 citations, with an average of more than 50 citations per paper and a Hirsch index $h = 53$. I highlight in boldface papers that were published in Physical Review Letters, and in red (italic) papers that received special recognition or were mentioned in the press.

Articles in Refereed Journals

A1. O. Benhar, E. Berti, V. Ferrari, *The imprint of the equation of state on the axial w -modes of oscillating neutron stars*, Mon. Not. R. Astron. Soc. **310**, 797 (1999). gr-qc/9901037

A2. V. Ferrari, M. D'Andrea, E. Berti, *Gravitational waves emitted by extrasolar planetary systems*, Int. J. of Mod. Phys. D **9**, n. 5, 495 (2000). astro-ph/0001463

A3. E. Berti, V. Ferrari, *Excitation of g -modes of solar type stars by an orbiting companion*, Phys. Rev. D **63**, 064031 (2001). astro-ph/0011364

A4. L. Gualtieri, E. Berti, J.A. Pons, G. Miniutti, V. Ferrari, *Gravitational signals emitted by a point mass orbiting a neutron star: a perturbative approach*, Phys. Rev. D **64**, 104007 (2001). gr-qc/0107046

A5. J.A. Pons, E. Berti, L. Gualtieri, G. Miniutti, V. Ferrari, *Gravitational signals emitted by a point mass orbiting a neutron star: effects of stellar structure*, Phys. Rev. D. **65**, 104021 (2002). gr-qc/0111104

A6. E. Berti, J.A. Pons, L. Gualtieri, G. Miniutti, V. Ferrari, *Are post-Newtonian templates faithful and effectual in detecting gravitational signals from neutron star binaries?*, Phys. Rev. D **66**, 064013 (2002). gr-qc/0208011

A7. G. Miniutti, J.A. Pons, E. Berti, L. Gualtieri, V. Ferrari, *Non-radial oscillation modes as a probe of density discontinuities in neutron stars*, Mon. Not. R. Astron. Soc. **338**, 389 (2003). astro-ph/0206142

A8. E. Berti, K.D. Kokkotas, *Quasinormal modes of Reissner-Nordström anti-de Sitter black holes: scalar, electromagnetic and gravitational perturbations*, Phys. Rev. D **67**, 064020 (2003). gr-qc/0301052

A9. E. Berti, K.D. Kokkotas, *Asymptotic quasinormal modes of Reissner-Nordström and Kerr black holes*, Phys. Rev. D **68**, 044027 (2003). hep-th/0303029

A10. E. Berti, K.D. Kokkotas, E. Papantonopoulos, *Stability of five-dimensional rotating black holes projected on the brane*, Phys. Rev. D **68**, 064020 (2003). gr-qc/0306106

A11. E. Berti, V. Cardoso, K.D. Kokkotas, H. Onozawa, *Highly damped quasinormal modes of Kerr black holes*, Phys. Rev. D **68**, 124018 (2003). hep-th/0307013

A12. E. Berti, M. Cavagliá, L. Gualtieri, *Gravitational energy loss in high energy particle collisions: ultrarelativistic plunge into a multidimensional black hole*, Phys. Rev. D **69**, 124011 (2004). hep-th/0309203

A13. E. Berti, N. Stergioulas, *Approximate matching of analytic and numerical solutions for rapidly rotating neutron stars*, Mon. Not. R. Astron. Soc. **350**, 1416 (2004). gr-qc/0310061

A14. E. Berti, V. Cardoso, S. Yoshida, *Highly damped quasinormal modes of Kerr black holes: A complete numerical investigation*, Phys. Rev. D **69**, 124018 (2004). gr-qc/0401052

A15. E. Berti, F. White, A. Maniopolou, M. Bruni, *Rotating neutron stars: an invariant comparison of approximate and numerical spacetime models*, Mon. Not. R. Astron. Soc. **358**, 923 (2005). gr-qc/0405146

A16. E. Berti, V. Cardoso, J. P. S. Lemos, *Quasinormal modes and classical wave propagation in analogue black holes*, Phys. Rev. D **70**, 124006 (2004). gr-qc/0408099

A17. E. Berti, A. Buonanno, C. M. Will, *Estimating spinning binary parameters and testing alternative theories of gravity with LISA*, Phys. Rev. D **71**, 084025 (2005). gr-qc/0411129

- A18.** E. Berti, K. D. Kokkotas, *Quasinormal modes of Kerr-Newman black holes: coupling of electromagnetic and gravitational perturbations*, Phys. Rev. D **71**, 124008 (2005). gr-qc/0502065
- A19.** V. Cardoso, E. Berti, M. Cavagliá, *What we (don't) know about black hole formation from high-energy collisions*, Class. Quant. Grav. **22**, L61 (2005). gr-qc/0505125
- A20.** E. Berti, V. Cardoso, M. Casals, *Eigenfunctions and eigenvalues of spin-weighted spheroidal harmonics in four and higher dimensions*, Phys. Rev. D. **73**, 024013 (2006); Erratum: Phys. Rev. D **73**, 109902(E) (2006). gr-qc/0511111
- A21.** E. Berti, V. Cardoso, C. M. Will, *On gravitational-wave spectroscopy of massive black holes with the space interferometer LISA*, Phys. Rev. D. **73**, 064030 (2006). gr-qc/0512160
- A22.** E. Berti, V. Cardoso, *Supermassive black holes or boson stars? Hair counting with gravitational-wave detectors*, Int. J. of Mod. Phys. D **15**, n. 12, 2209 (2006). gr-qc/0605101
- This essay received an Honorable Mention in the Gravity Research Foundation Essay Competition, 2006.*
- A23.** E. Berti, V. Cardoso, *Quasinormal ringing of Kerr black holes: The excitation factors*, Phys. Rev. D **74**, 104020 (2006). gr-qc/0605118
- A24.** E. Berti, S. Iyer, C. M. Will, *Eccentricity content of binary black hole initial data*, Phys. Rev. D **74**, 061503(R) (2006). gr-qc/0607047
- A25.** N. Dorband, E. Berti, P. Diener, E. Schnetter, M. Tiglio, *A numerical study of the quasinormal mode excitation of Kerr black holes*, Phys. Rev. D **74**, 084028 (2006). gr-qc/0608091
- A26.** E. Berti, V. Cardoso, J. A. González, U. Sperhake, *Mining information from binary black hole mergers: a comparison of estimation methods for complex exponentials in noise*, Phys. Rev. D **75**, 124017 (2007). gr-qc/0701086
- A27.** E. Berti, V. Cardoso, J. A. González, U. Sperhake, M. Hannam, S. Husa, B. Brügmann, *Inspiral, merger and ringdown of unequal mass black hole binaries: a multipolar analysis*, Phys. Rev. D **76**, 064034 (2007). gr-qc/0703053
- A28.** E. Berti, J. Cardoso, V. Cardoso, M. Cavagliá, *Matched-filtering and parameter estimation of ring-down waveforms*, Phys. Rev. D **76**, 104044 (2007). arXiv:0707.1202[gr-qc]
- A29.** E. Berti, S. Iyer, C. M. Will, *A post-Newtonian diagnosis of quasiequilibrium configurations of neutron star-neutron star and neutron star-black hole binaries*, Phys. Rev. D **77**, 024019 (2008). arXiv:0709.2589[gr-qc]
- A30.** U. Sperhake, E. Berti, V. Cardoso, J. A. González, B. Brügmann, M. Ansorg, *Eccentric binary black-hole mergers: The transition from inspiral to plunge in general relativity*, Phys. Rev. D **78**, 064069 (2008). arXiv:0710.3823[gr-qc]
- A31.** E. Berti, M. Volonteri, *Cosmological black hole spin evolution by mergers and accretion*, Astrophys. J. **684**, 822 (2008). arXiv:0802.0025[astro-ph]
- This paper was discussed in a cover story by New Scientist.*
- A32.** E. Berti, V. Cardoso, *Quasinormal modes and thermodynamic phase transitions*, Phys. Rev. D **77**, 087501 (2008). arXiv:0802.1889[hep-th]
- A33.** N. Yunes, E. Berti, *Accuracy of the post-Newtonian approximation: Optimal asymptotic expansion for quasi-circular, extreme-mass ratio inspirals*, Phys. Rev. D **77**, 124006 (2008). arXiv:0803.1853[gr-qc]
- A34.** L. Gualtieri, E. Berti, V. Cardoso, U. Sperhake, *Transformation of the multipolar components of gravitational radiation under rotations and boosts*, Phys. Rev. D **78**, 044024 (2008). arXiv:0805.1017[gr-qc]
- A35.** U. Sperhake, V. Cardoso, F. Pretorius, E. Berti, J. A. González, *The high-energy collision of two black holes*, Phys. Rev. Lett. **101**, 161101 (2008). arXiv:0806.1738[gr-qc]
- This paper was selected as an Editor's Suggestion by Physical Review Letters and discussed in various*

websites, such as [ScienceNews](#) and [SlashDot](#). It was also discussed by Leonid Leiva in the Swiss newspaper “*Neue Zürcher Zeitung*” (“*Schwarze Löcher halten sich bedeckt*”, Nov 12, 2008, page 30).

A36. V. Cardoso, A. S. Miranda, [E. Berti](#), H. Witek, V. T. Zanchin, *Geodesic stability, Lyapunov exponents and quasinormal modes*, Phys. Rev. D **79**, 064016 (2009). arXiv:0812.1806 [hep-th]

A37. [E. Berti](#), V. Cardoso, P. Pani, *Breit-Wigner resonances and the quasinormal modes of anti-de Sitter black holes*, Phys. Rev. D **79**, 101501(R) (2009), arXiv:0903.5311 [gr-qc]

A38. R. Cowsik, K. Wagoner, [E. Berti](#), A. Sircar, *Internal dynamics and dynamical friction effects in the dwarf spheroidal galaxy in Fornax*. Astrophys. J. **699**, 1389 (2009), arXiv:0904.0451 [astro-ph.CO]

A39. N. Yunes, K. G. Arun, [E. Berti](#), C. M. Will, *Post-circular expansion of eccentric binary inspirals: Fourier-domain waveforms in the stationary phase approximation*. Phys. Rev. D **80**, 084001 (2009), arXiv:0906.0313 [gr-qc]

A40. U. Sperhake, V. Cardoso, F. Pretorius, [E. Berti](#), T. Hinderer, N. Yunes, *Cross section, final spin and zoom-whirl behavior in high-energy black hole collisions*, Phys. Rev. Lett. **103**, 131102 (2009), arXiv:0907.1252 [gr-qc]

A41. P. Pani, [E. Berti](#), V. Cardoso, Y. Chen, R. Norte, *Gravitational wave signatures of the absence of an event horizon. I. Nonradial oscillations of a thin-shell gravastar*, Phys. Rev. D **80**, 124047 (2009), arXiv:0909.0287 [gr-qc]

A42. [E. Berti](#), V. Cardoso, L. Gualtieri, F. Pretorius, U. Sperhake, *Comment on “Kerr Black Holes as Particle Accelerators to Arbitrarily High Energy”*, Phys. Rev. Lett. **103**, 239001 (2009). arXiv:0911.2243 [gr-qc]

A43. P. Pani, [E. Berti](#), V. Cardoso, Y. Chen, R. Norte, *Gravitational wave signatures of the absence of an event horizon. II. Extreme mass ratio inspirals in the spacetime of a thin-shell gravastar*, Phys. Rev. D **81**, 084011 (2010). arXiv:1001.3031 [gr-qc]

A44. M. Kesden, U. Sperhake, [E. Berti](#), *Final spin from the merger of precessing binary black holes*, Phys. Rev. D **81**, 084054 (2010). arXiv:1002.2643 [astro-ph.GA]

A45. [E. Berti](#), V. Cardoso, T. Hinderer, M. Lemos, F. Pretorius, U. Sperhake, N. Yunes, *Semianalytical estimates of scattering thresholds and gravitational radiation in ultrarelativistic black hole encounters*, Phys. Rev. D **81**, 104048 (2010). arXiv:1003.0812 [gr-qc]

A46. M. Kesden, U. Sperhake, [E. Berti](#), *Relativistic suppression of black hole recoils*, Astrophys. J. **715**, 1006 (2010). arXiv:1003.4993 [astro-ph.CO]

A47. P. Pani, E. Barausse, [E. Berti](#), V. Cardoso, *Gravitational instabilities of superspinars*, Phys. Rev. D **82**, 044009 (2010). arXiv:1006.1863 [gr-qc]

A48. [E. Berti](#), V. Cardoso, B. Kipapa, *Up to eleven: radiation from particles with arbitrary energy falling into higher-dimensional black holes*, Phys. Rev. D **83**, 084018 (2011). arXiv:1010.3874 [gr-qc]

A49. U. Sperhake, [E. Berti](#), V. Cardoso, F. Pretorius, N. Yunes, *Superkicks in ultrarelativistic encounters of spinning black holes*, Phys. Rev. D **83**, 024037 (2011). arXiv:1011.3281 [gr-qc]

A50. A. Sesana, J. R. Gair, [E. Berti](#), M. Volonteri, *Reconstructing the massive black hole cosmic history through gravitational waves*, Phys. Rev. D **83**, 044036 (2011). arXiv:1011.5893 [astro-ph.CO]

A51. P. Pani, V. Cardoso, [E. Berti](#), J. Read, *Vacuum revealed: the final state of vacuum instabilities in compact stars*, Phys. Rev. D **83**, 081501 (2011). arXiv:1012.1343 [gr-qc]

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- R6**. E. Berti, K. Yagi, N. Yunes, *Extreme Gravity Tests with Gravitational Waves from Compact Binary Coalescences: (I) Inspirational-Merger*, Gen. Rel. Grav. **50**, 46 (2018). arXiv:1801.03208[gr-qc]
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Technical Reports / White Papers

T1. Member of the eLISA/NGO Science Performance Evaluation Taskforce and a contributor to the eLISA/NGO Yellow Book, available online at

<https://www.elisascience.org/whitepaper/>

T2. Member of the Science Taskforce for the NASA Physics of the Cosmos Gravitational-Wave Mission Concept Study Final Report, available online at

http://pcos.gsfc.nasa.gov/phypag/GW_Study_Rev3_Aug2012-Final.pdf

T3. Contributor to the white paper *The gravitational universe*, submitted to the European Space Agency for the L2/L3 selection of ESA's Cosmic Vision program (2013): see

<http://arxiv.org/abs/arXiv:1305.5720>

T4. Member of NASA's L3 Study Team and coauthor of the *L3 Study Team Interim Report*: see

http://pcos.gsfc.nasa.gov/studies/L3/L3ST_Interim_Report-Final.pdf

T5. Coauthor of the LISA proposal submitted on 1/13/2017 in response to the call of the European Space Agency (ESA) for L3 mission concepts: see

<https://arxiv.org/abs/arXiv:1702.00786>

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T6. Coauthor of *Accretion in Strong Field Gravity with eXTP*, a white paper in support of the mission concept of the enhanced X-ray Timing and Polarimetry (eXTP) mission. Science China submitted.

Lecture Notes

L1. E. Berti, *A black-hole primer: Particles, waves, critical phenomena and superradiant instabilities*, notes prepared for the DPG Physics School on General Relativity @ 99 (September 2014, Physikzentrum Bad Honnef, Germany). arXiv:1410.4481 [gr-qc]

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B1. E. Berti, "Gravity: Newtonian, Post-Newtonian, Relativistic", by Eric Poisson and Clifford M. Will. *Class. Quant. Grav.* **31**, 179003 (2014).

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O1. E. Berti, *Viewpoint: The First Sounds of Merging Black Holes*, *APS Physics* **9**, 17 (2016).

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This article and the related webpage were commissioned by the editors of Physical Review to accompany the historic paper by the LIGO/Virgo collaboration announcing the first direct detection of gravitational waves. Physics Viewpoints are "commentaries on papers written by prominent experts in their field for an audience with a college-level background in physics."