

Frederic A. Rasio
Dept of Physics and Astronomy
Northwestern University
2145 Sheridan Rd
Evanston, IL 60208

Tel: (847) 491 7904
rasio@northwestern.edu
ciera.northwestern.edu/rasio
Administrative Assistant:
Lisa Raymond: (847) 491 8646

CURRICULUM VITAE

PERSONAL

Born April 20, 1964, in Brussels, Belgium.
US and Belgian citizenships.

EDUCATION

1985 – 1991 [Cornell University](http://www.cornell.edu), Ithaca, New York, Department of Physics. Degrees: M.S. (1988), Ph.D. (1991). Ph.D. Thesis: “Hydrodynamic Calculations of Stellar Interactions.” Ph.D. Thesis advisors: Prof. Stuart L. Shapiro & Prof. Saul A. Teukolsky.
1980 – 1985 [Université Libre de Bruxelles](http://www.ulb.ac.be), Brussels, Belgium, Faculté des Sciences Appliquées. Degree: Ingénieur Physicien (M.S. in Applied Physics), Avec Grande Distinction (1985). Thesis: “Charge Division in Drift Chambers Operated in Streamer Mode.” Thesis advisor: Prof. Jean Sacton.

RESEARCH INTERESTS

Theoretical Astrophysics: dynamics of dense stellar systems (globular clusters, galactic nuclei, massive black holes); exoplanets (dynamics and formation); hydrodynamic stellar interactions (stellar collisions and mergers, binary coalescence, common envelope evolution); relativistic astrophysics (neutron stars and black holes, gravitational waves, relativistic star clusters); dynamics of binary and multiple star systems; radio pulsar timing and applications.

Computational Astrophysics: numerical hydrodynamics, numerical relativity, Monte Carlo methods, N-body simulations, parallel algorithms.

EMPLOYMENT

2001 – [Northwestern University](http://www.northwestern.edu), Evanston, Illinois:
Joseph Cummings Professor of Physics (2009 –);
Professor of Physics and Astronomy (2006 –);
Associate Professor of Physics and Astronomy (2001 – 2006).
1995 – 2002 [Massachusetts Institute of Technology](http://www.mit.edu), Cambridge, Massachusetts: Associate Professor of Physics (2001-02, on leave); Assistant Professor of Physics (1995 – 2001).
1992 – 1995 [Institute for Advanced Study](http://www.ias.edu), Princeton, New Jersey:
Member, School of Natural Sciences.
1986 – 1992 [Cornell University](http://www.cornell.edu), Ithaca, New York:
Research Associate, Department of Astronomy (1991-92);
Research Assistant, Department of Astronomy (1988 – 1991);
Teaching Assistant, Department of Physics (1986 – 1988).

AWARDS AND HONORS

2006-07 Research Mentor Award (Northwestern University, Weinberg College of Arts and Sciences).
2006 Elected Fellow of the American Physical Society.
2004-05 Faculty Honor Roll (Northwestern University Associated Student Government).
1996 – 2000 Sloan Research Fellow (Alfred P. Sloan Foundation).
1992 – 1995 Hubble Fellow (NASA).
1991 Graduate Student Prize (Astronomical Society of New York).
1985 – 1986 Hoover Foundation Fellow (Belgian American Educational Foundation).

MENTORING

Graduate Students Advised:

- Claire (Shi) Ye (2016 –)
- Kyle Kremer, NSF Graduate Fellow (2015 –)
- Josh Fixelle, NSF Graduate Fellow (2015 –)
- Jason Hwang, NSF GK-12 Fellow, NU PhD '17
- Joel Schwartz, NSF GK-12 Fellow, NU PhD '16
- Carl Rodriguez, NSF Graduate Fellow and GK-12 Fellow, NU PhD '16
- Meagan Morscher, NSF GK-12 Fellow, NU PhD '14
- Bharath Pattabiraman, NU PhD '14 (in Computer Science)
- Sanghamitra Goswami, NU PhD '13
- Sourav Chatterjee, NU PhD '10
- Emmanouela Rantsiou, NU PhD '09
- Genya Takeda, NU PhD '08
- Atakan Gürkan, NU PhD '05
- John Fregeau, MIT PhD '04
- Joshua Faber, MIT PhD '01
- Kriten Joshi, MIT PhD '00

Postdoctoral Fellows Mentored:

- Fabio Antonini (CIERA Fellow, 2015 – 2018)
- Sourav Chatterjee (CIERA Fellow, 2014 – 2018)
- Francesca Valsecchi (CIERA Fellow, 2013 – 2016)
- Smadar Naoz (Gruber Foundation Fellow, 2009 – 2011)
- Paul Kiel (2009 – 2011)
- Edward Thommes (2007 – 2009)
- Stefan Umbreit (2006 – 2010)
- Soko Matsumura (2006 – 2009)
- John Fregeau (NASA Chandra Fellow, 2005 – 2008)
- Natasha Ivanova (2002 – 2007)
- Marc Freitag (2002 – 2004)
- Joshua Faber (2001 – 2004)
- Simon Portegies Zwart (NASA Hubble Fellow, 1997 – 2000)

TEACHING EXPERIENCE

2001– Northwestern University, Department of Physics and Astronomy:

- ASTRON 449: 'Stellar Dynamics' (graduate-level introduction to galactic dynamics at the level of Binney & Tremaine).
- ASTRON 445: 'General Relativity and Applications' (graduate-level introduction to general relativity and relativistic astrophysics).
- ASTRON 390-JR: 'Astrobiology' (Junior Research Seminar).
- ASTRON 331: 'Astrophysics' (advanced undergraduate introduction to theoretical astrophysics).
- ASTRON 110: 'From Copernicus to Hawking: the People and Ideas that Shaped Modern Cosmology' (freshman seminar).
- PHYS 345: 'Introduction to General Relativity' (undergraduate introduction to relativity at the level of Hartle)
- PHYS 135: 'General Physics' (Section Instructor).
- PHYS 125-1: Physics for ISP (honors level introduction to classical mechanics)
- PHYS 110: 'Einstein's Outrageous Legacy' (freshman advising seminar)
- PHYS 110: 'Origins: from Big Bang Cosmology to Astrobiology' (freshman advising seminar).
- PHYS 110: 'The Physics of Armageddon' (freshman seminar).
- AGEP Professor - Midwest Crossroads AGEP (NSF Alliances for Graduate Education and the Professoriate) - a partnership of Northwestern, Indiana and Purdue University to increase minority participation in graduate studies and academia.
- supervised 8 PhD Theses (A. Gürkan, PhD '05; Genya Takeda, PhD '08; Emmanouela Rantsiou, PhD '09; Sourav Chatterjee, PhD '10; Sanghamitra Goswami, PhD '13; Bharath Pattabiraman, PhD '14; Meagan Morscher, PhD '15; Carl Rodriguez, PhD '16).
- supervised more than 50 REU and senior thesis students, and about 20 graduate students
- mentored 13 postdocs (F. Antonini, S. Chatterjee, C. Deloye, J. Faber, J. Fregeau, M. Freitag, N. Ivanova, P. Kiel, S. Matsumura, S. Naoz, E. Thommes, S. Umbreit, F. Valsecchi).

1996 – 2001 **MIT, Department of Physics:**

- 8.901: 'Astrophysics I' (graduate-level introduction to stellar astrophysics).
- 8.03: 'Physics III' (sophomore-level course at the level of Crawford, Waves).
- freshman advising seminars on Astrophysics.
- supervised 3 PhD Theses (K. Joshi, PhD '00; J. Faber, PhD '01; J. Fregeau, PhD '03).
- supervised 9 Physics senior theses.
- supervised 17 undergraduate (REU/UROP) students, 5 graduate students, and one postdoctoral fellow (S. Portegies Zwart).
- supervised high-school students in the Research Science Institute program.

ADMINISTRATIVE EXPERIENCE

- 2013 – Editor for [The Astrophysical Journal Letters](#)
- 2015 – 2019 Member of the Advisory Board of the Kavli Institute for Theoretical Physics (KITP) at the University of California, Santa Barbara (Co-Chair, 2018-19).
- 2009 – 2013 Founding Co-Director, Northwestern University Center for Interdisciplinary Exploration and Research in Astrophysics ([CIERA](#)).
- 2009 – [Aspen Center for Physics](#), General Board Member; member of the Summer Program Selection (2010, 2015), Summer Admissions (2011, 2014, 2017, 2018), Library (2012), and Nominations (2016) committees; Colloquium Committee (2013, member; 2014, chair); Assistant Scientific Secretary (2017-18).
- 2009 – 2011 American Astronomical Society Warner Prize and Pierce Prize Committee member.
- 2006 – 2012 Northwestern University, Member of the Administrative Board of The Graduate School.
- 2006 – 2008 Northwestern University, Limited Submissions Committee member.
- 2005 – 2012 Scientific Editor for [The Astrophysical Journal](#).
- 2005 – 2008 Northwestern University, Fulbright Fellowship Committee member.
- 2005-06 Northwestern University, Department of Materials Science Program Review Committee member.
- 2005 American Physical Society, World Year of Physics Talent Search Evaluator.
- 2004 – 2012 American Astronomical Society Employment Committee member; chair (2010-11).
- 2001 – Northwestern University, Weinberg College of Arts and Sciences:
Committee on Tenure (2016 – 2019);
Committee on Appeals (2006 – 2011);
Interdisciplinary Committee on Evolutionary Processes (2005 – 2011);
Dean's ad-hoc committees (most years);
[Integrated Science Program](#) Committee (2001 –).
- 2001 – Northwestern University, Department of Physics and Astronomy:
Student Awards Committee member (2017-18);
Director of Graduate Studies for Astronomy PhD Program (2016 –);
Faculty Search Committees (member 2002-03, 2015-16; chair 2008-09, 2016-17);
Executive Committee member (2010 – 2017);
Director of Graduate Studies (2006 – 2008);
Promotion Committees (2007-08; 2008-09; 2014-15);
Graduate Admissions (2006-07; 2009-10; 2014-15; 2015-16);
Awards and Honors Committee (2005 – 2009; chair 2014-15);
Long-Term Planning Committee (member 2004-05; chair 2005-06);
[Heilborn Lectures](#) Committee (2003 – 2005);
Colloquium Committee (2004 – 2006; 2010 – 2012);
Graduate Curriculum and Advising Committee (member 2001 – 2003; chair 2006 – 2008);
Undergraduate Program Reform Committee (2002-03);
IGERT Nonlinear Dynamics Program Executive Committee (2002-03);
Graduate Program Reform Committee (2001-02);
- 2001 Joint NSF/NASA [Task Force on Gravitational Wave Computation](#) (Chair: Saul Teukolsky).
- 1986 – 1991 MIT, Department of Physics:
Astrophysics Colloquium Chair (1995 – 1998);
Graduate Admissions (1997, 1999);
Astrophysics Web Site Administrator (1996 – 2001);
Physics Theory Retreat Committee (1999 – 2001);

CSR Space Planning Advisory Committee (1997 – 2001);
Special Taskforce on Education Information (1997-98);
two promotion committees.

- Proposal peer reviewer or review panel member/chair (US NSF, DOE, and NASA; European Research Council; Austrian Science Fund; Chilean CONICYT; Israel Science Foundation; French Agence Nationale de la Recherche; German DFG and Max Planck Society; Dutch NWO; Canadian NSERC and Canada Research Chairs Program; UK PPARC and Royal Society; Polish National Science Centre; Hong Kong Research Grants Council).
- Peer reviewer for The Astrophysical Journal, Astronomy & Astrophysics, Icarus, Monthly Notices of the Royal Astronomical Society, Nature, Physical Review D, Physical Review Letters, Science.

CONFERENCE ORGANIZATION

- International Conference on 'Extreme Solar Systems IV' (Reykjavik, Iceland, August 2019; main organizer) [12th International LISA Symposium](#) (Chicago, Illinois, July 2018; SOC co-chair with S. Larson).
- MODEST-18 Conference on '[Dense Stellar Systems in the Era of Gaia, LIGO, and LISA](#)' (Santorini, Greece, June 2018; SOC co-chair with R. de Grijs)
- International conference on '[Exoplanets and Planet Formation](#)' (Shanghai, China, December 2017; SOC member).
- Aspen Summer Program on 'Astrophysics of Gravitational Radiation Sources and Multimessenger Astronomy in the Era of LIGO Detections', Organizer (with M. Campanelli, V. Kalogera, J. Krolik, & S. Sigurdsson), Aspen Center for Physics, July 2017.
- Aspen Winter Conference [Formation and Dynamical Evolution of Exoplanets](#) (Aspen, CO, March 2017; main organizer).
- [Fellows at the Frontiers](#) 2016 (Evanston, IL, August 2016; SOC Chair).
- [Binary Stars in Cambridge](#) 2016 (Cambridge, United Kingdom, July 2016; SOC member).
- International Conference on '[Extreme Solar Systems III](#)' (Waikoloa, Hawaii, November 2015; SOC co-chair with M. Mayor).
- [Aspen Winter Conference](#) on 'Black Holes in Dense Star Clusters' (Aspen Center for Physics, Jan 2015; main organizer)
- MODEST-14 Conference on '[The dance of stars: dense stellar systems from infant to old](#)' (Physikzentrum Bad Honnef, Germany, June 2014, SOC member).
- International Conference on '[Extreme Solar Systems II](#)' (Jackson Hole, WY, September 2011; SOC co-chair with G. Marcy).
- Special Joint DAP/DNS Session on 'Neutron Stars and the Dense Matter Equation of State' at 2011 APS April Meeting (Anaheim, CA; coorganizer and co-chair with C. Horowitz).
- International Conference on 'The Evolution of Interacting Binaries' (Mykonos, Greece, June 2010; SOC member), in honor of Ron Webbink.
- [Aspen Winter Conference](#) on 'Formation and Evolution of Black Holes' ([Aspen Center for Physics](#), Feb 2010; main organizer).
- KITP Program on '[Formation and Evolution of Globular Clusters](#)', Coordinator (with A. Sills, E. Vesperini, & S. Zepf), UC Santa Barbara, January - April, 2009.
- Aspen Summer Program on '[Characteristics and Habitability of Super Earths](#)', Organizer (with E. Ford, L. Kaltenegger, & S. Seager), Aspen Center for Physics, August 2008.
- IAU Symposium 246 on '[Dynamical Evolution of Dense Stellar Systems](#)' (Capri, Italy, September 2007; SOC Member).
- International Conference on '[40 Years of Pulsars](#)' (Montreal, Canada, August 2007; SOC Member), celebrating the 40th anniversary of the discovery of the first radio pulsar by Bell Burnell and Hewish.
- International Conference on '[Extreme Solar Systems](#)' (Santorini, Greece, June 2007; SOC co-chair and proceedings co-editor), in honor of [Alex Wolszczan](#).
- 'Symposium on Relativity and Astrophysics' (Cornell University, Ithaca, New York, June 2007; SOC Member), in honor of [Saul Teukolsky](#).
- Pale Blue Dot III (Adler Planetarium, Chicago, September 2006; SOC member, LOC member).
- IAU General Assembly Joint Discussion on 'Compact Objects in Dense Star Clusters' (Prague, Czech Republic, August 2006; SOC cochair and proceedings editor).
- [MODEST-6](#) Conference on 'Modeling Dense Stellar Systems' (Northwestern University, August 2005; main organizer).
- [Aspen Winter Conference](#) on 'Planet Formation and Detection' ([Aspen Center for Physics](#), Feb 2005; co-organizer).
- [Aspen Winter Conference](#) on 'Binary Radio Pulsars' ([Aspen Center for Physics](#), Jan 2004; co-organizer).
- Co-organized 3 workshops for the NSF Center for Gravitational Wave Physics (at PSU) on 'Making Waves with Intermediate-Mass Black Holes' (May 2004; SOC member);
- 'Gravitational Wave Phenomenology' (Nov 2003; SOC member); and
- 'Source Simulation and Gravitational Wave Data Analysis' (Oct 2002; SOC member).
- [KITP Conference](#) on 'Globular Clusters: Formation, Evolution and the Role of Compact Objects' (Santa Barbara, Jan 2003; coordinator).
- [Conference on 'Radio Pulsars'](#) (Crete, Aug 2002; SOC member), in honor of [Andrew Lyne](#), [Dick Manchester](#) and [Joe Taylor](#).
- Aspen Center for Physics Program on 'Compact Objects in Dense Star Clusters' (June 2001; co-organizer).
- Colloquium on 'Stellar Collisions, Mergers, and Their Consequences' (June 2000; American Museum of Natural History, New York, SOC member).
- Aspen Center for Physics Program on 'Physical Applications of Radio Pulsar Timing' (June 1998, main organizer)

PROFESSIONAL ORGANIZATIONS

- [American Association for the Advancement of Science](#) (Member).
- [American Astronomical Society](#) (Member).
- [American Physical Society](#) (Fellow).
- [International Astronomical Union](#) (Member).

Updated October 2017