

# Frederic A. Rasio — Curriculum Vitae

December 28, 2010

## PERSONAL

Born April 20, 1964, in Brussels, Belgium.

Permanent US resident since 1995. Belgian citizenship.

## RESEARCH INTERESTS

Dynamics of dense stellar systems: globular clusters, galactic nuclei, massive black holes.

Hydrodynamic stellar interactions: stellar collisions and mergers, binary coalescence, common envelope evolution.

Relativistic astrophysics: neutron stars and black holes, radio pulsars, gravitational waves, relativistic star clusters.

Extrasolar planetary systems: dynamics, formation, planet–star interactions, planets in star clusters.

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

## EDUCATION

1985 – 1991 Cornell University, Ithaca, New York, Department of Physics. Degrees: M.S. (1988), Ph.D. (1991). Ph.D. Thesis: “Hydrodynamic Calculations of Stellar Interactions.” Ph.D. Thesis advisor: Prof. Stuart L. Shapiro.

1980 – 1985 Université Libre de Bruxelles, Brussels, Belgium, Faculté des Sciences Appliquées. Degree: Ingénieur Physicien (M.S. in Applied Physics), 1985. Thesis: “Charge Division in Drift Chambers Operated in Streamer Mode.” Thesis advisor: Prof. Jean Sacton.

## EMPLOYMENT

2001 – Northwestern University, Evanston, Illinois: J. 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, Cambridge, Massachusetts: Associate Professor of Physics (2001–2002, on leave); Assistant Professor of Physics (1995–2001).

1992 – 1995 Institute for Advanced Study, Princeton, New Jersey: Postdoctoral Fellow, School of Natural Sciences.

1985 – 1992 Cornell University, Ithaca, New York: Research Associate, Department of Astronomy (1991–92); Research Assistant, Department of Astronomy (1988 – 1991); Teaching Assistant, Department of Physics (1986 – 1988); Graduate Fellow, Department of Physics (1985–86).

## AWARDS, HONORS, AND FELLOWSHIPS

2007 Research Mentor Award, awarded by Northwestern University, Weinberg College of Arts and Sciences.

2006 Fellow of the American Physical Society.

Faculty Honor Roll, awarded by the Northwestern University Associated Student Government (2004–05).

Sloan Research Fellowship, awarded by the Alfred P. Sloan Foundation (1996 – 2000).

Hubble Postdoctoral Fellowship, awarded by NASA (1992 – 1995).

1991 Graduate Student Prize, awarded by the Astronomical Society of New York.

Hoover Foundation Fellowship, awarded by the Belgian American Educational Foundation (1985–86).

1985 Obtained the degree of Ingénieur Physicien at the Université Libre de Bruxelles *Avec Grande Distinction*.

## VISITING APPOINTMENTS

Member, Kavli Institute for Theoretical Physics, Santa Barbara, California (Spring 2009, Summer 2006, Winter 2004, Fall 1993).

Visiting Scholar, Center for Gravitational Wave Physics, Penn State University (Spring 2004).

Aspen Center for Physics, Summer Program Participant (2008, 2004, 2002, 2001, 1998, 1997).

Lecturer, NATO Advanced Study Institute (June 1999, Greece; October 1996, Italy; July 1995, UK).

Associate of Harvard College Observatory, Harvard-Smithsonian Center for Astrophysics (1998 – 2000).

Senior Visiting Fellow, Institute of Astronomy, University of Cambridge, UK (Summer 1995).

## RESEARCH SUPPORT

### Past Support:

Gas Dynamics and the Formation of Galaxies and Quasars. Loeb, A. (P.I.), Rasio, F.A. (co-I.), NASA Astrophysics Theory Program Grant NAG5-3085, \$240,000 awarded (to Harvard University) for 08/1995 – 07/1998.

Sloan Research Fellowship, awarded by the Alfred P. Sloan Foundation, \$35,000 awarded for 10/1996 – 09/2000.

Theoretical Studies of Dynamical Interactions between Stars. Rasio, F.A. (P.I.), NSF Grant AST-9618116, \$214,570 awarded for 05/1997 – 04/2001.

Stellar Evolution and Stellar Dynamics in Dense Star Clusters. Rasio, F.A. (MIT P.I.), NASA Hubble Fellowship Grant HF-01112.01-98A (to support Postdoctoral Fellow S. Portegies Zwart), \$202,000 awarded for 11/1998 – 10/2001.

Binary Stars and Globular Cluster Dynamics. Rasio, F.A. (P.I.), NASA Astrophysics Theory Program Grant NAG5-8460, \$242,278 awarded for 04/1999 – 04/2002.

Hydrodynamic Calculations of Coalescing Compact Binaries. Rasio, F.A. (P.I.), NSF Grant PHY-0070918, \$56,670 awarded for 08/2000 – 07/2001.

Binary Stars and Globular Cluster Dynamics. Rasio, F.A. (P.I.), NASA Astrophysics Theory Program Grant NAG5-11396, \$77,049 awarded for 07/2001 – 04/2002.

Hydrodynamic Calculations of Coalescing Compact Binaries. Rasio, F.A. (P.I.), NSF Grant PHY-0133425, \$124,353 awarded for 08/2001 – 07/2004.

Binary Stars and Globular Cluster Dynamics. Rasio, F.A. (P.I.), NASA Astrophysics Theory Program Grant NAG5-12044, \$259,770 awarded for 04/2002 – 04/2006.

Dynamics of Extrasolar Planetary Systems. Rasio, F.A. (P.I.), NSF Grant AST-0206182, \$227,376 awarded for 07/2002 – 06/2006.

Collaborative Research: Stellar Collisions and Mergers. Rasio, F.A. (P.I.), NSF Grant AST-0206276, \$50,244 awarded for 09/2002 – 08/2005 (J.C. Lombardi was P.I. on the corresponding grant at Vassar).

Theoretical Models of X-ray Binaries and Millisecond Pulsars in Globular Clusters. Rasio, F.A. (P.I.), NASA Chandra Theory Grant, subcontract TM3-4003X from Smithsonian Astrophysical Observatory, \$60,000 awarded for 01/2003 – 12/2004.

Stellar Sources of Low-Frequency Gravitational Waves. Kalogera, V. (P.I.), Freitag, M. (co-I.), Rasio, F.A. (co-I.), NASA Astrophysics Theory Program Grant NAG5-12345, \$253,762 awarded (to NU) for 04/2003 – 03/2006.

Hydrodynamic Calculations of Coalescing Compact Binaries. Rasio, F.A. (P.I.), NSF Grant PHY-0245028, \$116,000 awarded for 08/2003 – 07/2006.

Stellar Collisions in Dense Star Clusters and Galactic Nuclei. Rasio, F.A. (P.I.), NASA Astrophysics Theory Program Grant NNG04G176G, \$310,000 awarded for 05/2004 – 05/2007.

Modeling Stellar Exotica in Dense Star Clusters. Lombardi, J.C. (P.I.), Rasio, F.A. (co-P.I.), NSF Grant AST-0507561, \$177,563 awarded (to Vassar College) for 09/2005 – 08/2008.

Dynamical Formation of X-ray Sources in Globular Clusters. Fregeau, J.A. (Science P.I.), Rasio, F.A. (P.I.), NASA Chandra Theory Grant, subcontract from Smithsonian Astrophysical Observatory, \$78,986 awarded for 01/2006 – 01/2007.

Millisecond Pulsars and Core Collapse in the Globular Cluster NGC 6752. Heinke, C.O. (Science P.I.), Rasio, F.A. (P.I.), NASA Chandra GO Grant GO6-7034X from Smithsonian Astrophysical Observatory, \$38,998 awarded for 02/2006 – 02/2008.

Acquisition of a Versatile High Performance Computing Facility for Gravitational Wave Source Modeling and Student Training. Kalogera, V. (P.I.), Bayliss, A., Yusef-Zadeh, F., Rasio, F.A., & Taam, R.E. (co-P.I.), NSF MRI Grant PHY-0619274, \$416,198 awarded for 10/2006 - 09/2008.

Observational Signatures of Extrasolar Late Heavy Bombardments. Thommes, E. (Science P.I.), Rasio, F.A. (P.I.), NASA Spitzer Theory Grant NMO710076, awarded through the Caltech Jet Propulsion Laboratory, \$86,144 awarded for 07/2007 – 06/2009.

Conference on ‘Extreme Solar Systems.’ Rasio, F.A. (P.I.), Wolszczan, A. (co-P.I.), NSF Grant AST-0732444, \$26,000 for 07/2007 – 06/2008.

Dynamics of Extrasolar Planetary Systems. Rasio, F.A. (P.I.), NSF Grant AST-0507727, \$397,336 awarded for 08/2005 – 07/2009.

Binary Stars and Globular Cluster Dynamics. Rasio, F.A. (P.I.), NASA Astrophysics Theory Program Grant NNH05ZDA001N, \$373,148 awarded for 12/2005 – 11/2008.

Dynamical Formation of X-ray Sources in Dense Star Clusters. Fregeau, J.A. (Science P.I.), Rasio, F.A. (P.I.), NASA Chandra Fellowship Grant PF7-80047, awarded through the Smithsonian Astrophysical Observatory, \$88,682 awarded for 08/2007 – 07/2008.

Intermediate-Mass Black Holes in Galactic Nuclei and Starbursts. Rasio, F.A. (P.I.), Freitag, M. (co-P.I.), NSF Grant AST-0607498, \$364,598 awarded for 06/2006 – 05/2010.

Dynamical Formation and Evolution of Compact Binaries. Rasio, F.A. (P.I.), NSF Grant PHY-0601995, \$197,996 awarded for 08/2006 – 01/2010.

**Present Support:**

Hydrodynamics of Stellar Collisions and Mergers. Rasio, F.A. (P.I.), NASA Astrophysics Theory and Fundamental Physics Grant NNX08AG66G, \$416,923 awarded for 03/2008 – 03/2012.

Intermediate-Mass Black Holes in Globular Clusters, Umbreit, S. (Science P.I.), Rasio, F.A. (P.I.), Hubble Theory HST-AR-11779.01-A, awarded through the Space Telescope Science Institute, \$85,000 awarded for 11/2008 – 10/2010.

Binary Stars and Globular Cluster Dynamics. Rasio, F.A. (P.I.) NASA ATFP Grant NNX09AO36G, \$470,721 awarded for 08/2009 – 07/2012.

Dynamical Formation and Evolution of Compact Binaries. Rasio, F.A. (P.I.), NSF Grant PHY-0855592, \$229,106 awarded for 08/2009 – 07/2012.

Formation of Black Hole X-Ray Binaries in Globular Clusters. Umbreit S. (Science P.I.), Rasio, F.A. (P.I.), NASA Chandra Theory Grant #12620791 from Smithsonian Astrophysical Observatory, \$85,000 awarded for 01/2011 – 12/2012

## PUBLICATIONS

Publications in refereed journals are marked with a \* following the number; invited conference papers are marked with a +; invited reviews are marked with a #.

The twenty most cited papers are highlighted with their title in boldface. The number of citations reported by the NASA Astrophysics Data System is given in square brackets following the title.

An online version of this list, including links to electronic copies of all papers in PDF format and full citation information, is available at <http://ciera.northwestern.edu/rasio/>.

1. Solving the Collisionless Boltzmann Equation in General Relativity. Rasio, F.A., Shapiro, S.L., & Teukolsky, S.A. 1989, in *Dynamics of Dense Stellar Systems*, ed. D. Merritt (Cambridge: Cambridge Univ. Press), 121–130.
2. \* On the Existence of Stable Relativistic Star Clusters with Arbitrarily Large Central Redshifts. Rasio, F.A., Shapiro, S.L., & Teukolsky, S.A. 1989, *Astrophysical Journal Letters*, **336**, L63–L66.
3. \* What is Causing the Eclipse in the Millisecond Binary Pulsar? Rasio, F.A., Shapiro, S.L., & Teukolsky, S.A. 1989, *Astrophysical Journal*, **342**, 934–939.
4. \* Solving the Vlasov Equation in General Relativity. Rasio, F.A., Shapiro, S.L., & Teukolsky, S.A. 1989, *Astrophysical Journal*, **344**, 146–157.
5. \* Encounters between Compact Stars and Red Giants in Dense Stellar Systems. Rasio, F.A., & Shapiro, S.L. 1990, *Astrophysical Journal*, **354**, 201–210.
6. \* Eclipse Mechanisms for Binary Pulsars. Rasio, F.A., Shapiro, S.L., & Teukolsky, S.A. 1991, *Astronomy & Astrophysics*, **241**, L25–L28.
7. \* **Collisions of Giant Stars with Compact Objects: Hydrodynamical Calculations** [117]. Rasio, F.A., & Shapiro, S.L. 1991, *Astrophysical Journal*, **377**, 559–580.
8. \* An Test for the Existence of a Planetary System Orbiting PSR 1257+12. Rasio, F.A., Nicholson, P.D., Shapiro, S.L., & Teukolsky, S.A. 1992, *Nature*, **355**, 325–326.
9. \* Formation of a ‘Planet’ by Rapid Evaporation of a Pulsar’s Companion. Rasio, F.A., Shapiro, S.L., & Teukolsky, S.A. 1992, *Astronomy & Astrophysics*, **256**, L35–L37.
10. \* **Hydrodynamical Evolution of Coalescing Neutron Star Binaries** [113]. Rasio, F.A., & Shapiro, S.L. 1992, *Astrophysical Journal*, **401**, 226–245.
11. \* **Hydrodynamic Instability and Coalescence of Close Binary Systems** [64]. Lai, D., Rasio, F.A., & Shapiro, S.L. 1993, *Astrophysical Journal Letters*, **406**, L63–L66.
12. \* Collisions and Close Encounters between Massive Main-Sequence Stars. Lai, D., Rasio, F.A., & Shapiro, S.L. 1993, *Astrophysical Journal*, **412**, 593–611.

13. Orbital Evolution of the PSR 1257+12 Planetary System. Rasio, F.A., Nicholson, P.D., Shapiro, S.L., & Teukolsky, S.A. 1993, in *Planets around Pulsars*, ed. A. Philips, S. Thorsett, & S. Kulkarni (ASP Conference Series Vol. 36), 107–120.
14. \* **Ellipsoidal Figures of Equilibrium: Compressible Models** [160]. Lai, D., Rasio, F.A., & Shapiro, S.L. 1993, *Astrophysical Journal Supplements*, **88**, 205–252.
15. \* Hydrodynamic Stellar Interactions in Dense Star Clusters. Rasio, F.A. 1993, *Publications of the Astronomical Society of the Pacific*, **105**, 973–976.
16. Hydrodynamic Instabilities in Close Binary Systems and the Formation of Blue Stragglers. Rasio, F.A. 1993, in *Blue Stragglers*, ed. R.A. Saffer (ASP Conference Series Vol. 53), 196–200.
17. \* **Hydrodynamic Instability and Coalescence of Binary Neutron Stars** [100]. Lai, D., Rasio, F.A., & Shapiro, S.L. 1994, *Astrophysical Journal*, **420**, 811–829.
18. \* **Equilibrium, Stability, and Orbital Evolution of Close Binary Systems** [64]. Lai, D., Rasio, F.A., & Shapiro, S.L. 1994, *Astrophysical Journal*, **423**, 344–370.
19. \* Is there a Planet in the PSR 1620–26 Triple System? Rasio, F.A. 1994, *Astrophysical Journal Letters*, **427**, L107–L110.
20. \* **Collapse of Primordial Gas Clouds and the Formation of Quasar Black Holes** [92]. Loeb, A., & Rasio, F.A. 1994, *Astrophysical Journal*, **432**, 52–61.
21. \* **Hydrodynamics of Binary Coalescence. I. Polytropes with Stiff Equations of State** [119]. Rasio, F.A., & Shapiro, S.L. 1994, *Astrophysical Journal*, **432**, 242–261.
22. \* A Possible Optical Counterpart for the Triple Pulsar System PSR B1620–26. Bailyn, C.D., Rubenstein, E.P., Girard, T.M., Dinescu, D.I., Rasio, F.A., & Yanny, B. 1994, *Astrophysical Journal Letters*, **433**, L89–L92.
23. # Hydrodynamics of Binary Coalescence. Rasio, F.A. 1994, in *Evolutionary Links in the Zoo of Interacting Binaries*, ed. F. D’Antona et al. (Memorie della Società Astronomica Italiana, Vol. 65), 37–48.
24. Explosions of Neutron Star Fragments Ejected during Binary Coalescence. Colpi, M., & Rasio, F.A. 1994, in *Evolutionary Links in the Zoo of Interacting Binaries*, ed. F. D’Antona et al. (Memorie della Società Astronomica Italiana, Vol. 65), 379–382.
25. \* Hydrodynamics of Rotating Stars and Close Binary Interactions: Compressible Ellipsoid Models. Lai, D., Rasio, F.A., & Shapiro, S.L. 1994, *Astrophysical Journal*, **437**, 742–769.
26. Hydrodynamical Instability and Orbital Evolution of Close Binary Systems. Lai, D., Rasio, F.A., & Shapiro, S.L. 1994, in *The Evolution of X-ray Binaries*, ed. S. Holt (AIP Conference Series Vol. 308), 303–306.
27. \* Binary–Binary Interactions and the Formation of the PSR B1620–26 Triple System in M4. Rasio, F.A., McMillan, S., & Hut, P. 1995, *Astrophysical Journal Letters*, **438**, L33–L36.
28. \* **Hydrodynamics of Binary Coalescence. II. Polytropes with  $\Gamma=5/3$**  [109]. Rasio, F.A., & Shapiro, S.L. 1995, *Astrophysical Journal*, **438**, 887–903.
29. Secular Evolution of the Eccentricity in the PSR1620–26 Triple System. Rasio, F.A. 1995, in *Millisecond Pulsars: A Decade of Surprise*, ed. D. Backer et al. (ASP Conference Series Vol. 72), 424–428.
30. \* The Minimum Mass Ratio of W Ursae Majoris Binaries. Rasio, F.A. 1995, *Astrophysical Journal Letters*, **444**, L41–L43.
31. \* On Blue Straggler Formation by Direct Collisions of Main–Sequence Stars. Lombardi, J., Rasio, F.A., & Shapiro, S.L. 1995, *Astrophysical Journal Letters*, **445**, L117–L120.

32. \* The Orbital Eccentricities of Binary Millisecond Pulsars in Globular Clusters. Rasio, F.A., & Heggie, D. 1995, *Astrophysical Journal Letters*, **445**, L133–L135.
33. # Hydrodynamic Evolution of Coalescing Compact Binaries. Rasio, F.A., & Shapiro, S.L. 1996, in *Compact Stars in Binaries*, Proceedings of IAU Symposium 165, ed. J. van Paradijs et al. (Dordrecht: Kluwer), 17–28.
34. \* Collisions of Main-Sequence Stars and the Formation of Blue Stragglers in Globular Clusters. Lombardi, J., Rasio, F.A., & Shapiro, S.L. 1996, *Astrophysical Journal*, **469**, 797–818.
35. \* The Effect of Encounters on the Eccentricity of Binaries in Clusters. Heggie, D., & Rasio, F.A. 1996, *Monthly Notices of the Royal Astron. Soc.*, **282**, 1064–1084.
36. # Hydrodynamics of Stellar Mergers and the Formation of Blue Stragglers. Rasio, F.A. 1996, in *The Origins, Evolution, and Destinies of Binary Stars in Clusters*, ed. E.F. Milone & J.-C. Mermilliod (ASP Conference Series Vol. 90), 368–377.
37. Dynamical Interactions and Binary Millisecond Pulsars in Globular Clusters. Rasio, F.A., & Heggie, D.C. 1996, in *The Origins, Evolution, and Destinies of Binary Stars in Clusters*, ed. E.F. Milone & J.-C. Mermilliod (ASP Conference Series Vol. 90), 410–412.
38. # Hydrodynamic Instabilities in Close Binary Systems. Rasio, F.A. 1996, in *Evolutionary Processes in Binary Stars*, ed. R.A.M.J. Wijers, M.B. Davies, & C.A. Tout (NATO ASI Series, Dordrecht: Kluwer), 121–140.
39. # SPH Calculations of Collisions between Main-Sequence Stars. Rasio, F.A. 1996, in *Dynamical Evolution of Star Clusters*, ed. P. Hut & J. Makino (IAU Symposium 174, Dordrecht: Kluwer), 253–262.
40. \* **Tidal Decay of Close Planetary Orbits** [171]. Rasio, F.A., Tout, C.A., Lubow, S.H., & Livio, M. 1996, *Astrophysical Journal*, **470**, 1187–1192.
41. \* **On the Formation and Evolution of Common Envelope Systems** [64]. Rasio, F.A., & Livio, M. 1996, *Astrophysical Journal*, **471**, 366–376.
42. Orbital Parameters of the PSR B1620–26 Triple System. Arzoumanian, Z., Joshi, K., Rasio, F.A., & Thorsett, S.E. 1996, in *Pulsars: Problems and Progress*, ed. S. Johnston et al. (IAU Colloquium 160, ASP Conference Series Vol. 105), 525–530.
43. + The Origin and Evolution of Millisecond Pulsars. Bailes, M., Ergma, E., Lyne, A., Rasio, F., van den Heuvel, E., van Kerkwijk, M., Verbunt, F., & Wijers, R. 1996, in *Pulsars: Problems and Progress*, ed. S. Johnston et al. (IAU Colloquium 160, ASP Conference Series Vol. 105), 557–582.
44. \* **Dynamical Instabilities and the Formation of Extrasolar Planetary Systems** [275]. Rasio, F.A., & Ford, E.B. 1996, *Science*, **274**, 954–956.
45. \* Distant Companions and Planets around Millisecond Pulsars. Joshi, K.J., & Rasio, F.A. 1997, *Astrophysical Journal*, **479**, 948–959.
46. \* Post-Newtonian Models of Binary Neutron Stars. Lombardi, J.C., Jr., Rasio, F.A., & Shapiro, S.L. 1997, *Physical Review D*, **56**, 3416–3438.
47. \* Evolution of Stellar Collision Products in Globular Clusters. I. Head-On Collisions. Sills, A., Lombardi, J.C., Jr., Bailyn, C.D., Demarque, P., Rasio, F.A., & Shapiro, S.L. 1997, *Astrophysical Journal*, **487**, 290–303.
48. # Newtonian and Post-Newtonian Calculations of Coalescing Compact Binaries. Rasio, F.A. 1998, in *Relativistic Astrophysics*, ed. H. Riffert et al. (Proceedings of 162nd W.E. Heraeus Seminar, Wiesbaden: Vieweg Verlag), 181–195.
49. # Coalescing Binary Neutron Stars. Rasio, F.A. 1998, in *The Many Faces of Neutron Stars*, ed. R. Buccheri, J. van Paradijs, & M.A. Alpar (NATO ASI Series, Dordrecht: Kluwer), 474–488.

50. Lessons from 3-D Hydrodynamic Calculations of Binary Neutron Star Coalescence. Rasio, F.A. 1998, in *Eighteenth Texas Symposium on Relativistic Astrophysics and Cosmology*, ed. A.V. Olinto, J.A. Frieman, & D.N. Schramm (Singapore: World Scientific), 595–597.
51. # Smoothed Particle Hydrodynamics Calculations of Stellar Interactions. Rasio, F.A., & Lombardi, J.C., Jr. 1999, in *Journal of Computational and Applied Mathematics*, **109**, 213–230.
52. \* **Structure and Evolution of Nearby Stars with Planets. I. Short-Period Systems** [64]. Ford, E.B., Rasio, F.A., & Sills, A. 1999, *Astrophysical Journal*, **514**, 411–429.
53. \* Tests of Spurious Transport in Smoothed Particle Hydrodynamics. Lombardi, J.C., Jr., Sills, A., Rasio, F.A., & Shapiro, S.L. 1999, *Journal of Computational Physics*, **152**, 687–735.
54. # Coalescing Binary Neutron Stars. Rasio, F.A., & Shapiro, S.L. 1999, *Classical and Quantum Gravity*, **16**, R1–R29.
55. + Theoretical Implications of the 47 Tuc Pulsars. Rasio, F.A. 2000, in *Pulsar Astronomy – 2000 and Beyond*, ed. M. Kramer, N. Wex, & R. Wielebinski (IAU Colloquium 177, ASP Conference Series Vol. 202), 589–594.
56. \* Theoretical Implications of the PSR B1620–26 Triple System and its Planet. Ford, E.B., Joshi, K.J., Rasio, F.A., & Zbarsky, B. 2000, *Astrophysical Journal*, **528**, 336–350.
57. \* **Formation of Short-Period Binary Pulsars in Globular Clusters** [87]. Rasio, F.A., Pfahl, E.D., & Rappaport, S.A. 2000, *Astrophysical Journal Letters*, **532**, L47–L50.
58. # Particle Methods in Astrophysical Fluid Dynamics. Rasio, F.A. 2000, in *Proceedings of the 5th International Conference on Computational Physics (ICCP5)*, ed. Y. Hiwatari et al. (Progress of Theoretical Physics Supplement No. 138), 609–621.
59. \* **Secular Evolution of Hierarchical Triple Star Systems** [98]. Ford, E.B., Kozinsky, B., & Rasio, F.A. 2000, *Astrophysical Journal*, **535**, 385–401. Erratum: **605**, 966.
60. \* Thermal and Dynamical Equilibrium in Two-Component Star Clusters. Watters, W.A., Joshi, K.J., & Rasio, F.A. 2000, *Astrophysical Journal*, **539**, 331–341.
61. \* Monte Carlo Simulations of Globular Cluster Evolution. I. Method and Test Calculations. Joshi, K.J., Rasio, F.A., & Portegies Zwart, S. 2000, *Astrophysical Journal*, **540**, 969–982.
62. \* Post-Newtonian SPH Calculations of Binary Neutron Star Coalescence. I. Method and First Results. Faber, J.A., & Rasio, F.A. 2000, *Physical Review D*, **62**, 064012 (1–23).
63. # Hydrodynamics of Neutron Star Mergers. Faber, J.A., & Rasio, F.A. 2001, in *Astrophysical Sources for Ground-Based Gravitational Wave Detectors*, ed. J.M. Centrella (AIP Conference Proceedings Vol. 575), 130–142.
64. Post-Newtonian SPH Simulations of Binary Neutron Stars. Faber, J.A., & Rasio, F.A. 2001, in *Twentieth Texas Symposium on Relativistic Astrophysics*, ed. J.C. Wheeler & H. Martel (AIP Conference Proceedings Vol. 586), 775–778.
65. \* LISA Sources in Globular Clusters. Benacquista, M.J., Portegies Zwart, S., & Rasio, F.A. 2001, *Classical and Quantum Gravity*, **18**, 4025–4031.
66. + The Final Fate of Coalescing Binary Neutron Stars: Collapse to a Black Hole? Rasio, F.A. 2001, in *Black Holes in Binaries and Galactic Nuclei (ESO Workshop in Honour of R. Giacconi)*, ed. L. Kaper, E.P.J. van den Heuvel, & P.A. Woudt (Berlin: Springer Verlag), 344–350.
67. + Monte Carlo Simulations of Globular Cluster Dynamics. Rasio, F.A. 2001, in *Dynamics of Star Clusters and the Milky Way*, ed. S. Deiters, et al. (ASP Conference Series Vol. 228), 117–124.
68. + A Hierarchical Triple Star System in M4. Rasio, F.A. 2001, in *Evolution of Binary and Multiple Star Systems*, ed. P. Podsiadlowski et al. (ASP Conference Series Vol. 229), 117–130.

69. + Formation of Compact Binaries in Globular Clusters. Rappaport, S., Pfahl, E., Rasio, F., & Podsiadlowski, P. 2001, in *Evolution of Binary and Multiple Star Systems*, ed. P. Podsiadlowski et al. (ASP Conference Series Vol. 229), 409–422.
70. # Binaries and Globular Cluster Dynamics. Rasio, F.A., Fregeau, J.M., & Joshi, K.J. 2001, *Astrophysics & Space Science*, **264**, 387–402.
71. # The Final Fate of Coalescing Compact Binaries: From Black Hole to Planet Formation. Rasio, F.A. 2001, in *The Neutron Star – Black Hole Connection*, ed. C. Kouveliotou et al. (NATO ASI Series, Dordrecht: Kluwer), 95–108.
72. \* Evolution of Stellar Collision Products in Globular Clusters. II. Off-Axis Collisions. Sills, A., Faber, J.A., Lombardi, J.C., Jr., Rasio, F.A., & Warren, A. 2001, *Astrophysical Journal*, **548**, 323–334.
73. \* Post-Newtonian SPH Calculations of Binary Neutron Star Coalescence. II. Binary Mass-Ratio, Equation of State, and Spin Dependence. Faber, J.A., Rasio, F.A., & Manor, J.B. 2001, *Physical Review D*, **63**, 044012 (1–16).
74. \* Monte Carlo Simulations of Globular Cluster Evolution. II. Mass Spectra, Stellar Evolution and Lifetimes in the Galaxy. Joshi, K.J., Nave, C., & Rasio, F.A. 2001, *Astrophysical Journal*, **550**, 691–702.
75. \* **Dynamical Instabilities in Extrasolar Planetary Systems Containing Two Giant Planets** [82]. Ford, E.B., Havlickova, M., & Rasio, F.A. 2001, *Icarus*, **150**, 303–313.
76. \* Ruling Out Chaos in Compact Binary Systems. Schnittman, J.D., & Rasio, F.A. 2001, *Physical Review Letters*, **87**, 121101 (1–4).
77. # Stellar Collisions and Blue Straggler Formation. Lombardi, J.C., & Rasio, F.A. 2002, in *Stellar Collisions, Mergers and their Consequences*, ed. M. Shara (ASP Conference Series Vol. 263), 35–64.
78. \* Stellar Collisions and the Interior Structure of Blue Stragglers. Lombardi, J.C., Warren, J.S., Rasio, F.A., Sills, A., & Warren, A.R. 2002, *Astrophysical Journal*, **568**, 939–953.
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#### **Papers in preparation:**

174. # Pulsars in Globular Clusters. Camilo, F., & Rasio, F.A. 2009, Invited Review for *Annual Reviews of Astronomy and Astrophysics*.

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#### **Popular Articles:**

Book Review: *The Gravitational Million-Body Problem: A Multidisciplinary Approach to Star Cluster Dynamics* by Douglas Heggie and Piet Hut, reviewed by F.A. Rasio, *Physics Today*, May 2004.

#### **Books Edited:**

Binary Radio Pulsars. Rasio, F.A., & Stairs, I.H., editors (ASP Conference Series Vol. 328, 2005).

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#### **PROFESSIONAL TALKS**

*The Million-Body Problem: Particle Simulations in Astrophysics*. Physics Colloquium, UCLA, November 2010; Astronomy Department Colloquium, University of Florida, October 2009; Rutgers Astrophysics Colloquium, June 2008; Fermilab Colloquium, January 2006; Physics and Astronomy Colloquium, Northwestern University, October 2005.

*Overview of Dynamics Questions*, Opening Talk at the KITP Conference on Formation and Evolution of Globular Clusters, Kavli Institute for Theoretical Physics, Santa Barbara, CA, January 2009.

*Gravitational Waves from Compact Binary Mergers*, Invited Talk, Meeting of the American Physical Society, St Louis, MO, April 2008.

*Black Holes in Dense Star Clusters*. Institute for Theory and Computation Colloquium, Harvard University, December 2005; Astronomy Seminar, Vrije Universiteit Brussel, Belgium, February 2006.

*Planets in Binary Stars*. Invited Talk at the International Conference on ‘Binaries in the 21st Century,’ Syros, Greece, June 2005.

*Formation of Intermediate-Mass Black Holes near Galactic Centers*. Talk presented at the Aspen Center for Physics Program on ‘LISA Data: Analysis, Sources, and Science,’ Aspen, Colorado, June 2005.

*Gravitational Waves from Black Holes in Star Clusters*. University of Wisconsin Center for Gravitation and Cosmology Seminar, May 2005; Max Planck Institute for Radio Astronomy Seminar, University of Bonn, Germany, June 2005.

*Formation of IMBH and Young Stars near the Galactic Center*. Invited Talk at the KITP Conference on ‘The Paradoxes of Massive Black Holes,’ UC Santa Barbara, April 2005.

*Gravitational Wave Emission from Compact Binary Mergers*. Invited Review Talk at the 14th International Conference on General Relativity and Gravitation (JGRG14), Yukawa Institute for Theoretical Physics, Kyoto University, Japan, November 2004.

*The Origins of Planets*. Evolution Discussion Group Seminar, Northwestern University, November 2004.

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*Mergers of Stellar-Mass Black Holes in Dense Star Clusters.* Invited Talk at the Workshop on ‘Making Waves with Intermediate-Mass Black Holes,’ Penn State Center for Gravitational Wave Physics, May 2004.

*The Planet in M4.* KITP Seminar, Program on ‘Planet Formation: Terrestrial and Extra Solar,’ UC Santa Barbara, February 2004.

*Relativistic Calculations of Coalescing Binary Neutron Stars.* Invited Review Talk at the International Conference on ‘Gravitation and Cosmology,’ (ICGC04), Cochin, India, January 2004.

*Formation and Evolution of Compact Binaries in Globular Clusters.* Invited Review Talk at IAU Colloquium 194 on ‘Compact Binaries in the Galaxy and Beyond,’ La Paz, Mexico, November 2003.

*White Dwarf Binaries in Globular Clusters.* Invited Talk at the Focus Session on ‘Globular Cluster Dynamics and Gravitational Radiation,’ Penn State Center for Gravitational Wave Physics, October 2003.

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*A Pulsar, a Young White Dwarf, and the Oldest Known Planet.* Physics Colloquium, University of British Columbia, Vancouver, Canada, September 2003.

*Gravitational Wave Signals from Compact Binary Mergers.* Invited Talk at the Gravitational Wave Advanced Detectors Workshop, Aspen Center for Physics, January 2003.

*Probing the Equation of State of Neutron Stars with LIGO.* Invited Talk at the Focus Session on ‘Source Simulation and Gravitational Wave Data Analysis,’ Penn State Center for Gravitational Wave Physics, October 2002.

Panelist, Conference Summary Panel Discussion, Carnegie Centennial Symposium on ‘Coevolution of Black Holes and Galaxies,’ Pasadena, October 2002.

*Dynamics of Dense Star Clusters.* Invited Review Talk at the Carnegie Centennial Symposium on ‘Coevolution of Black Holes and Galaxies,’ Pasadena, October 2002.

*Worlds Apart: Discoveries of Extrasolar Planets.* Integrated Sciences Program Colloquium, Northwestern University, September 2002.

*Formation and Evolution of Millisecond Pulsars in Globular Clusters.* Invited Review Talk at the Conference on ‘Radio Pulsars’ (in honor of A. Lyne, R. Manchester and J. Taylor), Chania, Crete, August 2002.

*Probing the Neutron Star Equation of State with Gravitational Wave Detectors.* Invited Talk at the SPIE Conference on ‘Astronomy Outside the Electromagnetic Spectrum,’ Hawaii, August 2002.

*Post-Newtonian Calculations of Neutron-Star Binary Mergers.* Invited Talk at the Workshop on Gravitational Wave Sources, LIGO Laboratory, Livingston, Louisiana, March 2002.

*Particle Methods in Astrophysical Fluid Dynamics.* Applied Mathematics Colloquium, Northwestern University, March 2002.

*Monte Carlo Simulations of Dense Star Cluster Dynamics.* Review Talk given at the Workshop on ‘Compact Objects in Dense Star Clusters,’ Aspen Center for Physics, June 2001.

*Post-Newtonian SPH Calculations of Compact Binary Mergers.* Astrophysics Seminar given at the Albert Einstein Institute, Max-Planck-Institut für Gravitationsphysik, Potsdam, Germany, January 2001.

*Prospects for Detection of kHz Merger Signals by LIGO II.* Invited Talk at the Aspen Winter Conference on Gravitational Waves, Aspen Center for Physics, January 2001.

*Hydrodynamics of Neutron Star Mergers.* Invited Talk at the Workshop on the ‘Astrophysics of Sources for Ground-Based Gravitational Wave Detectors,’ Drexel University, Philadelphia, October 2000.

*Binaries in Globular Clusters.* Invited Review Talk at the International Conference on ‘The Influence of Binaries on Stellar Population Studies,’ Brussels, Belgium, August 2000.

*Secular Evolution of Hierarchical Triple Star Systems.* Invited Talk at the Rome Astronomical Observatory Conference on ‘Evolution of Binary and Multiple Star Systems’ (in Honour of Prof. P. Eggleton), Bormio, Italy, June 2000.

*Coalescing Binary Neutron Stars.* Invited Lecture at the European Center for Theoretical Physics workshop on ‘Neutron Star Interiors and Related Phenomena,’ Trento, Italy, June 2000.

*Stellar Collisions and the Formation of Blue Stragglers in Globular Clusters.* Invited Talk at the Colloquium on ‘Stellar Collisions, Mergers, and Their Consequences,’ at the American Museum of Natural History (for the inauguration of the newly rebuilt Hayden Planetarium), New York City, May 2000.

*Hydrodynamics of Neutron Star Mergers.* Physics and Astronomy Colloquium, Northwestern University, May 2000.

*Monte Carlo Simulations of Globular Cluster Dynamics.* Invited Talk at the Spring International Conference of the German Astronomische Gesellschaft on ‘Dynamics of Star Clusters and the Milky Way,’ Heidelberg, Germany, March 2000.

*Pulsars in Globular Clusters.* Astronomy Colloquium given at Harvard University, UIUC, and the University of Chicago (January 2000); Cornell University, UCSC, UC Berkeley, and Stanford (March 2000); and Northwestern University (May 2000).

*Particle Methods in Astrophysical Fluid Dynamics.* Plenary Review Talk at the 5th International Conference on Computational Physics (ICCP5), held in Kanazawa, Japan, October 1999.

*The Final Fate of Coalescing Binary Neutron Stars: Collapse to a Black Hole?* Invited Talk at the ESO Workshop on ‘Black Holes in Binaries and Galactic Nuclei’ (in Honour of Prof. R. Giacconi), Garching, Germany, September 1999.

*Theoretical Implications of the 47 Tuc Pulsars.* Talk presented at the IAU Colloquium 177 on ‘Pulsar Astronomy - 2000 and Beyond,’ Bonn, Germany, August 1999.

*Planets around Neutron Stars.* Invited Lecture at the NATO Advanced Study Institute on ‘The Neutron Star – Black Hole Connection,’ Elounda, Greece, June 1998.

*Hydrodynamics of Coalescing Compact Binaries.* Invited Lecture at the NATO Advanced Study Institute on ‘The Neutron Star – Black Hole Connection,’ Elounda, Greece, June 1998.

*Blue Stragglers.* Astronomy Colloquium, Penn State University, March 1998.

*Formation and Evolution of Blue Stragglers.* Theoretical Astrophysics Seminar, University of Arizona, Tucson, AZ, December 1997.

*Planets and Brown Dwarfs around Pulsars.* Astrophysics Colloquium, University of Arizona, Tucson, AZ, December 1997.

*Tidal Dissipation in Hot Jupiters.* Invited Talk at the Aspen Summer Program on ‘Formation and Evolution of Extrasolar Planets and Brown Dwarfs,’ June 1997.

*Formation and Evolution of Extrasolar Planetary Systems.* Astronomy Colloquium given at UIUC (April 1997) and Cornell University (May 1997).

*Dynamical Interaction and the Formation of Extrasolar Planetary Systems.* Star Formation Seminar, Harvard-Smithsonian Center for Astrophysics, April 1997.



*Coalescing Binary Neutron Stars*. Invited Lecture at the NATO Advanced Study Institute on ‘The Many Faces of Neutron Stars,’ Lipari, Italy, October 1996.

*Newtonian and Post-Newtonian Calculations of Coalescing Compact Binaries*. Invited Review Talk at the 162nd W.E. Heraeus Seminar on ‘Relativistic Astrophysics,’ Bad Honnef, Germany, August 1996.

*Stellar Collisions and the Formation of Blue Stragglers*. Harvard-Smithsonian Center for Astrophysics Colloquium, May 1996.

Panelist, Panel Discussion on *The Formation of Millisecond Pulsars*, at IAU Colloquium 160 on ‘Pulsars: Problems and Progress,’ Sydney, Australia, January 1996.

*Blue Stragglers in Globular Clusters*. MIT Center for Space Research Seminar, November 1995.

*Stellar Collisions and the Formation of Blue Stragglers in Globular Clusters*. Invited Talk at the IAU Symposium 174 on ‘Dynamical Evolution of Star Clusters,’ University of Tokyo, Japan, August 1995.

Panelist, Panel Discussion on ‘Tidal Capture’ at the NATO Advanced Study Institute on ‘Evolutionary Processes in Close Binary Stars,’ University of Cambridge, England, July 1995,

*Hydrodynamic Instabilities in Close Binary Systems and Binary Coalescence*. Invited Lecture at the NATO Advanced Study Institute on ‘Evolutionary Processes in Close Binary Stars,’ University of Cambridge, England, July 1995,

*Hydrodynamics of Stellar Mergers and the Formation of Blue Stragglers*. Invited Talk at the International Conference on ‘The Origins, Evolution, and Destinies of Binary Stars in Clusters,’ University of Calgary, Canada, June 1995.

*Gravitational Waves from Neutron Star Binary Mergers*. Physics Colloquium, Drexel University, Philadelphia, May 1995.

*Formation and Evolution of Triple Star Systems in Globular Clusters*. Invited Talk, Fourth Annual Hubble Fellows Symposium, Space Telescope Science Institute, Baltimore, MD, October 1994.

*Tidal Disruption and Coalescence of Compact Binaries*. Invited Review Talk at IAU Symposium 165 on ‘Compact Stars in Binaries,’ The Hague, The Netherlands, August 1994.

*Planets around Pulsars*. Astrophysics Colloquium given at the University of Maryland (April 1994), MIT (March 1994) and the University of British Columbia (February 1994).

*Hydrodynamic Calculations of Binary Neutron Star Coalescence*. Invited Talk, Spring Meeting of the American Physical Society, Washington, DC, April 1994.

*Hydrodynamics of Binary Neutron Star Coalescence*. Physics Colloquium at the University of British Columbia, Vancouver, Canada, February 1994.

*Hydrodynamics of Stellar Collisions*. Invited Review Talk at the Conference on ‘Dynamics of Dense Stellar Systems,’ held at the Institute for Theoretical Physics, Santa Barbara, October 1993.

*Hydrodynamics of Binary Coalescence*. Invited Review Talk at the International Workshop on ‘Evolutionary Links in the Zoo of Interacting Binaries,’ Rome Observatory, Monte Porzio, Italy, June 1993.

*Stellar Collisions involving Neutron Stars in Globular Clusters*. Astrophysics Seminar given at the Institute for Advanced Study, Princeton, NJ, December 1991

*Planets around Pulsars*. Astronomy Seminar at the Harvard-Smithsonian Center for Astrophysics, October 1991.

*Collisions of Neutron Stars and Red Giants*. Graduate Student Prize Talk given at the annual meeting of the Astronomical Society of New York, Schenectady, NY, April 1990.

*Solving the Collisionless Boltzmann Equation in General Relativity*. Talk presented at the Workshop on ‘Dynamics of Dense Stellar Systems,’ University of Toronto, Canada, May 1988.

## PEER REVIEW AND RELATED ACTIVITIES

Scientific Editor for *The Astrophysical Journal* (2005–2011): responsible for the peer review of about 200 articles per year in the areas of planet and star formation, compact objects, stellar dynamics and relativistic astrophysics.

Editor of the book *Extreme Solar Systems* (with D. Fischer, S.E. Thorsett, and A. Wolszczan), Vol. 398, published by the Astronomical Society of the Pacific (2008) ISBN 978-1-58381-666-0.

Editor of the book *Binary Radio Pulsars* (with I.H. Stairs), published by the Astronomical Society of the Pacific (2005), ISBN 1-58381-191-5.

Peer reviewer for *The Astrophysical Journal*, *Astronomy & Astrophysics*, *Icarus*, *Monthly Notices of the Royal Astronomical Society*, *Nature*, *Physical Review D*, *Physical Review Letters*, *Reviews of Modern Physics*, *Science*.

Proposal peer reviewer and review panel member for NASA, NSF, NSERC (Canada), PPARC (UK).

Book reviewer for Addison Wesley, *Physics Today*, Prentice Hall.

External reviewer for tenure and promotion cases at Caltech, Cornell University, Harvard-Smithsonian Center for Astrophysics, Penn State University.

External reviewer for various Prize and Fellowship Selection Committees (Cottrell Scholar Award, Benoist Prize of Switzerland).

## PROFESSIONAL AFFILIATIONS AND SERVICE

### Professional Organizations:

American Association for the Advancement of Science: Member.

American Astronomical Society: Member (1989 –).

American Physical Society: Member (1989 – 2006); Fellow (2006 –).

International Astronomical Union: Member (1994 –).

Aspen Center for Physics: General Member (2009 –).

### Service:

American Astronomical Society: Warner Prize and Pierce Prize Committee (member, 2009 – 2011); Committee on Employment (member, 2004 –; chair, 2010 – 2011); Subcommittee on Postdoctoral Fellowship Deadlines (chair, 2005 – 06); Scientific Editor for *The Astrophysical Journal* (2005 – 2011).

American Physical Society: Division of Computational Physics Nominating Committee (member, 2007 –); World Year of Physics Talent Search Evaluator (2005).

LIGO Scientific Collaboration: Gravitational Wave Analysis Group Facilitator (2001 –).

Joint NSF/NASA Task Force on Gravitational Wave Computation, member (2001–02).

### Conferences Organized:

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; co-organizer 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’ (UC Santa Barbara, January – April 2009; Coordinator).

Aspen Summer Program on ‘Characteristics and Habitability of Super Earths’ (Aspen Center for Physics, August 2008; Organizer).

IAU Symposium 246 on ‘Dynamical Evolution of Dense Stellar Systems’ (Capri, Italy, September 2007; Scientific Organizing Committee member).

International Conference on ‘40 years of Pulsars’ (Montreal, Canada, August 2007; Scientific Organizing Committee member).

International Conference on ‘Extreme Solar Systems’ (Santorini, Greece, June 2007; SOC co-chair and proceedings co-editor).

‘Symposium on Relativity and Astrophysics’ (Cornell University, Ithica, New York, June 2007, Scientific Organizing Committee member).

Pale Blue Dot III, NASA Astrobiology Conference at the Adler Planetarium (Chicago, September 2006; Local Organizing Committee member and Program Organizing Committee member).

Joint Discussion VI on ‘Neutron Stars and Black Holes in Star Clusters’ at the 2006 IAU General Assembly (Prague, Czech Republic, August 2006; Scientific Organizing Committee chair).

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, February 2005; co-organizer).

Center for Gravitational Wave Physics Workshop on ‘Making Waves with Intermediate-Mass Black Holes’ (Penn State University, May 2004; co-organizer).

Aspen Winter Conference on ‘Binary Radio Pulsars’ (Aspen Center for Physics, January 2004; co-organizer).

Center for Gravitational Wave Physics Workshop on ‘Gravitational Wave Phenomenology’ (Penn State University, November 2003; Scientific Organizing Committee member).

KITP Conference on ‘Globular Clusters: Formation, Evolution and the Role of Compact Objects’ (Kavli Institute for Theoretical Physics, Santa Barbara, January 2003; coordinator).

Center for Gravitational Wave Physics Workshop on ‘Source Simulation and Gravitational Wave Data Analysis’ (Penn State University, October 2002; Scientific Organizing Committee member).

Conference on ‘Radio Pulsars’ in honor of A. Lyne, R. Manchester and J. Taylor (Crete, August 2002; Scientific Organizing Committee member).

Aspen Summer Program on ‘Compact Objects in Dense Star Clusters’ (Aspen Center for Physics, June 2001; co-organizer).

Colloquium on ‘Stellar Collisions, Mergers, and Their Consequences’ (American Museum of Natural History, New York, June 2000; Scientific Organizing Committee member).

Aspen Summer Program on ‘Physical Applications of Radio Pulsar Timing’ (Aspen Center for Physics, June 1998; main organizer).

Princeton Conference on ‘Some Unsolved Problems in Astrophysics’ in honor of J.N. Bahcall, (Institute for Advanced Study, Princeton, NJ, April 1995; Local Organizing Committee member).

## TEACHING AND ADVISING

### Courses taught at NU:

ASTRON 449: ‘Stellar Dynamics,’ graduate-level introduction to galactic dynamics at the level of *Binney & Tremaine*.

ASTRON 445-1,2: ‘General Relativity and Applications,’ graduate-level introduction to general relativity and relativistic astrophysics.

ASTRON 331-0, ‘Astrophysics,’ advanced undergraduate introduction to astrophysics and cosmology.

ASTRON 390-JR, ‘Astrobiology,’ WCAS Junior Research Seminar.

PHYSICS 135-3, 'General Physics' (Section Instructor).

ASTRON 110-6, Freshman Seminar, 'From Copernicus to Hawking: the People and Ideas that Shaped Modern Cosmology.'

PHYSICS 110-6, Freshman Advising Seminar, 'Origins: from Big Bang Cosmology to Astrobiology.'

PHYSICS 110-6, Freshman Seminar, 'The Physics of Armageddon.'

**Postdocs supervised:**

2009– Paul Kiel (University of Melbourne PhD '09).

2009– Smadar Naoz (Tel Aviv University PhD '09)

2006– Stefan Umbreit (Max Planck Institute for Astronomy PhD '06).

2006–2009 Soko Matsumura (McMaster PhD '06).

2007–2008 Edward Thommes (Queen's University PhD '00).

2004–2008 Christopher Deloye (UCSB PhD '04), with R. Taam.

2004–2008 John Fregeau (MIT PhD '04); now Chandra Fellow at KITP, UC Santa Barbara.

2004–2005 Marc Freitag (Université de Genève D.Sc. '01), with V. Kalogera; now at the University of Cambridge, UK.

2002–2005 Natasha Ivanova (Oxford D.Phil. '03), with V. Kalogera and R. Taam; now Assistant Professor at the University of Alberta, Canada.

2001–2004 Joshua Faber (MIT PhD '01); now Assistant Professor at the Rochester Institute of Technology.

1998–2001 Simon Portegies Zwart (Hubble Fellow at MIT); now tenured Professor at the University of Amsterdam.

**NU PhD Theses supervised:**

Genya Takeda, "Planetary Systems in Binaries" (defended June 2008).

M. Atakan Gürkan, "Massive Black Holes in Dense Star Clusters" (defended June 2005).

Emmanouela Rantsiou, "Relativistic SPH Calculations of Black Hole – Neutron Star Binary Mergers" (defended July 2009).

Sourav Chatterjee, "Numerical Modeling of Dense Star Clusters" (defended September 2010).

**NU PhD students supervised:**

Semyon Chaichenets (Fall 2003 – Spring 2005).

Sourav Chatterjee (Fall 2003 – Summer 2010).

Sanghamitra Goswami (Fall 2007 –).

M. Atakan Gürkan (Winter 2002 – Summer 2005).

Jason Hwang (Fall 2009 –).

Luis Mier y Teran (Fall 2003 – Fall 2004).

Meagan Morscher (Fall 2007 –).

Bharath Pattabiraman (Fall 2010 –).

Emmanouela Rantsiou (Fall 2004 – Summer 2009).

Genya Takeda (Fall 2002 – Summer 2008).

**NU Undergraduate (REU, Work-Study, Senior Thesis) students supervised:**

David Ackerman (2006 – 2009).

Matthew Bierbaum (2007 – 2009).

Gaspard Clozel (2007 – 2008).

Daniel Douglas (2010 –).

Leah Isaman (2010 –).

Durwood Jones (2002 – 2004).

Ryosuke Kita (2006 – 2008).

Aaron Lee (2005 – 2007).

Ian Lizarraga (2010 –).  
Verene Lystad (2003 – 2005).  
Colleen Moore (2008 – 2009).  
Ryan O’Leary (2003 – 2005).  
Samuel Rubinstein (2006 – 2008).  
Brandon Schlenker (2003 – 2004).  
William Shepherd (2005 – 2007).  
Bradley Solomon (2010 – 2011).  
Mark Tibbitt (2005 – 2006).  
Teresa Wong (2007 – 2009).  
Kenneth Yu (2001 – 2003).

**NU Senior Honors Theses supervised:**

David Ackerman. “The Role of Post-Newtonian Gravity in Planetary Dynamics” (2010) – won the award for best senior thesis in Integrated Science in 2009–10.  
Matthew Bierbaum, “Optimizing Monte Carlo Simulations of Star Clusters with CUDA” (2010).  
Gaspard Clozel, “Orbit Analysis in the Halos of Simulated Galaxy Mergers” (2008).  
Ryosuke Kita, “Habitability of Earth-like Planets in Binary Star Systems” (2009).  
Aaron Lee, “Resonance Trapping in Protoplanetary Discs” (2007) – won the award for best senior thesis in Physics and Astronomy in 2006–07.  
Verene Lystad, “Stability, Dynamics, and Origins of the Upsilon Andromedae Planetary System” (2005) – won the award for best senior thesis in Physics and Astronomy in 2004–05.  
Ryan O’Leary, “Dynamics of Black Holes in Dense Star Cluster” (2005).  
Kenneth Yu, “Chaos and the Dynamics of Extrasolar Planetary Systems” (2003) – won the award for best senior thesis in Physics and Astronomy in 2002–03.

**Other:**

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.

**At MIT (1995–2000):**

8.901: ‘Astrophysics I’ (graduate-level introduction to stellar astrophysics).  
8.03: ‘Physics III’ (sophomore-level course on waves and vibrations).  
Freshman advising seminars on Astrophysics.  
Supervised 3 PhD Theses (K. Joshi, PhD ’00; J. Faber, PhD ’01; J. Fregeau, PhD ’03, with S. Rappaport).  
Supervised 9 Physics Senior Theses.  
Supervised 17 undergraduate (REU/UROP) students.  
Supervised 5 graduate students (J. Faber, J. Fregeau, K. Joshi, J. Schnittman, B. Tam).  
Supervised 1 postdoctoral fellow (S. Portegies Zwart).  
Supervised high-school students in the Research Science Institute program.

**DEPARTMENT, COLLEGE, UNIVERSITY SERVICE**

**Northwestern University:**

Co-Director, Center for Interdisciplinary Exploration and Research in Astrophysics (CIERA, 2009–).  
Administrative Board of The Graduate School (2006 –).  
Limited Submissions committee member (2006 – 2008).  
Program Review Committee for the Department of Materials Science & Engineering (2005–06).  
Fulbright Fellowship Committee member (2005 – 2008).  
IGERT Nonlinear Dynamics Program Executive Committee member (2002-03).

**Weinberg College of Arts and Sciences:**

Committee on Appeals (2006 – ).

Several Dean’s ad-hoc Committees.

Integrated Science Program Committee (2001 - ).

Interdisciplinary Committee on Evolutionary Processes (2005 – ).

**Department of Physics and Astronomy:**

Executive Committee (2010 – ).

Director of Graduate Studies (2006 – 2008).

Promotion Committees (2007–08; 2008–09).

Graduate Admissions (2006–07; 2009–10).

Long-Term Planning Committee (member 2004–05; chair 2005–06).

Awards Committee (2005 – 2009).

Colloquium Committee (2004 – 2006; 2010–11).

Heilborn Lectures Committee (2003 – 2005).

Undergraduate Program Reform Committee (2002–03).

Faculty Search Committees (member 2002–03; chair 2008-09).

Graduate Program Reform Committee (2001-02).

Graduate Curriculum and Advising Committee (member 2001 – 2003; chair 2006 – 2008).

**At MIT (1995–2000):**

Astrophysics Colloquium Chair (1995 – 1998).

Department of Physics Graduate Admissions (1997, 1999).

Physics Theory Retreat Committee (1999 – 2001).

Center for Space Research, Space Planning Advisory Committee (1997 – 2001).

Special Taskforce on Education Information (1997–98).

Two promotion committees.