

E. Sterl Phinney
Curriculum Vitae

Education:

Cambridge University (U.K.)
PhD (Theoretical Astrophysics): 1983 Advisor: (Lord) Martin J. Rees
California Institute of Technology
B.S. (Astronomy) : 1980

Employment:

California Institute of Technology:
Executive Officer for Astronomy & Astrophysics (2013–2016),
Professor of Theoretical Astrophysics (1995–),
Associate Professor of Theoretical Astrophysics (1991–95),
Assistant Professor of Theoretical Astrophysics (1985–90),
The Institute for Advanced Study, Princeton:
Member with Long–Term Appointment (1983–85)
Visiting appointments (1985–2020): Johns Hopkins, Berkeley, KITP, IAS, ESO,
Radboud University (Excellence Initiative Professor)

Awards and Memberships:

Salpeter Lectureship, Cornell University (1999)
ASCIT Excellence in Teaching Award (1999)
Warner Prize of the American Astronomical Society (1995)
Alfred P. Sloan Foundation Research Fellow (1990–94)
Presidential Young Investigator (1985–1990)
Marshall Scholarship (1980–1983)
Fellow: American Physical Society, Royal Astronomical Society.
Member: American Astronomical Society

Recent Professional Activities:

Associate, Canadian Inst. for Adv. Research Cosmology & Gravity Prog. (2008–)
ZTF Partnership Science Steering Committee (2019–)
CoI & Science Team member, ULTRASat (2015–), DUET (2019–)
Vice-chair, NASA Astrophysics Research Program Review (2010–2011)
Fachbeirat, Max Planck Institute for Gravitational Physics (2007–2012)
Chairman, LISA Sources and Data Analysis Working Group (2001–11)
Member, LISA International Science Team (‘LIST’) (2001–11)
Member, Astronomy and Astrophysics Advisory Committee (AAAC) (2005–8)
Member, NASA Universe Exploration Strategic Roadmap Committee (2005–8)
Chairman, Astronomy & Astrophysics Panel of the NAS/NRC Committee on
Priorities in Space Science Enabled by Nuclear Power and Propulsion (2004–5)
Principal Investigator, NASA Mission Concept Study: the Big Bang Observer
[advanced gravitational wave mission] (2004–5)
Chairman, NASA OSS/SEU Strategic Plan Roadmap Team (2001–2003)
Member, NASA Structure and Evolution of the Universe Subcommittee (2000–3)
Member, NASA SPIDR Technology Assessment Team (2002–2003)
Chairman, LISA Mission Definition Team (1997–2001)

Current Research Interests:

Physics around black holes, including tidal disruption of stars. Pulsar physics. Interactions of binary white dwarfs and neutron stars. Engine-powered supernovae. Fast Radio Bursts. Astrophysical sources of gravitational radiation.

Undergraduate SURF (summer research) students sponsored in past 5 years:

Hyerin Cho, Adam Jermyn, Guglielmo Lockhart, Christopher Moore

Graduate Advisees:

M. Coleman Miller (Prof U. Md), Steinn Sigurdsson (Prof Penn State), Lin Zuo (entrepreneur), Maurice van Putten (Prof Sejong University), Alice Quillen (Prof U. Rochester), Brad Hansen (Prof UCLA), Sanjoy Mahajan (Prof Olin College of Engineering and MIT), Michael Hartl (entrepreneur and author), Alison Farmer (Harvard), J. Nate Bode (Boston Consulting), Chris Wegg (Curie Fellow, Observatoire de la Côte d'Azur), Io Kleiser (JPL), Elena Murchikova (Institute for Advanced Study). **Current students:** Anna Ho (coadvisor w/ Kulkarni)

Postdoctoral fellows sponsored in past 5 years:

Naoki Seto, Yasushi Mino, Étienne Racine, Jeandrew Brink, David Tsang, Michael Kesden, Tony Piro, Kumiko Kotera, Jim Fuller, Drew Clausen, Jono Squire, **Current Postdocs:** Clément Bonnerot, Wenbin Lu, Paz Beniamini, Ilaria Caiazzo, Dongzi Li, Abigail Polin (lifetime total: 33).

Teaching:

ACM 95b (Introductory Methods of Applied Mathematics: ODEs and Special Functions)
Ay 20 (Basic Astronomy and the Galaxy)
Ay 21 (Galaxies and Cosmology)
Ay 102 (Physics of the Interstellar Medium)
Ay 104 (Relativistic Astrophysics)
Ay 121 (Radiative Processes)
Ay 123 (Structure and Evolution of Stars)
Ay 124 (Structure and Dynamics of Galaxies)
Ay 125 (High-Energy Astrophysics)
Ay 126 (The Interstellar Medium)
Ay 127 (Cosmology and Galaxy Formation)
Ay 141abc (Journal Club)
Ay 215 (varies with year: Star Formation; Disks and Accretion; Astronomical Transients; Compact Binaries)
Ay 218 (varies with year: Physics of Accretion and Active Galactic Nuclei; Theory of Gamma-Ray Bursts; Gamma-ray Astronomy)
Ph 1b,c (Mechanics, Special Relativity, Electromagnetism)
Ph 101 (Order of Magnitude Physics)
Ph 106ab (Hamiltonian and Lagrangian Dynamics)
Ph 136b (Hydrodynamics, Plasma Physics)
Ph 236abc (General Relativity)

Current Caltech committees:

Caltech Faculty Board Nominating Committee (2020-)
Caltech Student Life and Housing Committee (2019-)
Physics Colloquium Committee (2016-)
Astronomy Graduate Admissions Committee 2017-2020 (Chair: 2018)

Caltech Curriculum Committee (2013-2019)
Physics Prize Postdoctoral Fellowship Committee 2009-2020 (Chair: 2011-2014)
Physics Staffing Committee, Astronomy Staffing Committee
Chair, PMA Division Chair selection committee (1998, 2008, 2010)
Undergraduate Academic Standards and Honors Committee (2010-2016)

SELECTED PUBLICATIONS

1. Rees, M.J., Phinney, E.S., Begelman, M.C. & Blandford, R.D. 1982 *Nature*, 295, 17-21 “Ion-supported tori and the origin of radio jets”
2. Sanders, D. B., Phinney, E. S., Neugebauer, G., Soifer, B. T. & Matthews, K 1989 *ApJ* 347, 29-51 “Continuum energy distribution of quasars –Shapes and origins”
3. Phinney, E.S. 1991, *ApJL* 380, L17-L21 “The Rate of Neutron Star Binary Mergers in the Universe.”
4. Phinney, E.S. 1992, *Phil. Trans. Roy. Soc. Lond. A* 341, 39-71 “Pulsars as Probes of Newtonian Dynamics”
5. Phinney, E.S. & Kulkarni, S.R. 1994 *ARAA* 32, 591-639 “Binary and Millisecond Pulsars”
6. Sigurdsson, S. & Phinney, E.S. 1995 *ApJS* 99, 609-635 “ Dynamics and Interactions of Binaries and Neutron Stars in Globular Clusters”
7. Spruit, H. & Phinney, E.S. 1998 *Nature*, 393, 139-141 “Birth Kicks as the Origin of Pulsar Rotation”
8. Phinney, E.S. 2002, *Science Requirements for LISA*, available at <http://www.its.caltech.edu/~esp/lisa/LISTwg1.req-pr.pdf>.
9. Phinney, E.S. et al 2003 *Beyond Einstein: from the Big Bang to black holes*, NASA Publication NP-2002-10-510-GSFC.
10. Gair, J.R. et al 2004 *Class. Quant. Grav.* 21, S1595 [[gr-qc/0405137](https://arxiv.org/abs/gr-qc/0405137)] “Event rate estimates for LISA extreme mass ratio capture sources” Presentation and longer white paper distributed to LIST available at http://www.srl.caltech.edu/lisa/talks/phinney_wg1_dec03.pdf <http://www.vallis.org/publications/LISTEMRIreport.pdf>
11. Farmer, A. & Phinney, E.S. 2003 *MNRAS* 346, 1197-1214 “ The Gravitational Wave Background from Cosmological Compact Binaries”
12. Milosavljević, M. & Phinney, E.S. 2005 *ApJ* 622, L93-L96 “The afterglow of massive black hole ccoalescence”
13. Racine, É, Phinney, E.S. & Arras, P. 2007 *MNRAS* 380, 381-398 “Non-dissipative tidal synchronization in accreting binary white dwarf systems”
14. Phinney, E.S. 2009 [arXiv.org/abs/0903.0098](https://arxiv.org/abs/0903.0098) “Finding and Using Electromagnetic Counterparts of Gravitational Wave Sources”
15. Kesden, M., Lockhart, G., Phinney, E.S. 2010 *Phys Rev D*, 82, 124045 “Maximum black-hole spin from quasi-circular binary mergers”
16. Wegg, C. & Phinney, E.S. 2012 *MNRAS* 426, 427 “White dwarf kinematics versus mass”
17. Kotera, K., Phinney, E.S. & Olinto, A.V. 2013 *MNRAS* 432, 3228 “Signatures of pulsars in the light curves of newly formed supernova remnants”
18. Tang, S., Kaplan, D.L., Phinney, E.S. et al 2014 *ApJ Letts* 791, L5 “Identification of the Optical Counterpart of Fermi Black Widow Millisecond Pulsar PSR J1544+4937”
19. Sagiv, I. et al 2014 *AJ* 147, 79 “Science with a Wide-field UV Transient Explorer”
20. Bellm, E.C. et al 2016 *ApJ* 816, 74 “Properties and Evolution of the Redback Millisecond Pulsar Binary PSR J2129-0429”
21. Nelemans, G., Siess, L., Repetto, S., Toonen, S. & Phinney, E.S. 2016 *ApJ* 817, 69 (arXiv:1511.07701) “The Formation of Cataclysmic Variables: The Influence of Nova Eruptions”
22. Ravi, V., Vedantham, H & Phinney, E.S. 2018 *MNRAS* 478, L72 (arXiv:1710.03813) “La Freccia Rossa: An IR-dark cloud hosting the Milky Way intermediate-mass black hole candidate”
23. Vedantham, H.K. & Phinney, E.S. 2019 *MNRAS* 483, 971 (arXiv:1811.10876) “Radio wave scattering by circumgalactic cool gas clumps”

24. Ho, A.Y.Q., Phinney, E.S., Ravi, V. et al 2018 ApJ 871, 73 (arXiv:1810.10880) “AT2018cow: a Luminous Millimeter Transient”
25. Murchikova, E.M., Phinney, E.S., Pancoast, A. & Blandford, R.D. 2019 Nature 570, 83 (arXiv:1906.08289) “A Cool Accretion Disk around the Galactic Centre Black Hole”
26. Burdge, K.B., Fuller, J., Phinney, E.S. et al 2019 ApJ 866, L12 (arXiv:1910.11389) “Orbital Decay in a 20 Minute Orbital Period Detached Binary with a Hydrogen Poor Low Mass White Dwarf”
27. Anderson, M. M.; Mooley, K. P.; Hallinan, G.; Dong, D.; Phinney, E. S. et al 2020 ApJ submitted (arXiv:1910.11912) “The First Radio-Discovered Tidal Disruption Event, CNSS J0019+00”
28. Lu, W. & Phinney, E. S. 2020 MNRAS, submitted (arXiv:1912.12241) “Imprint of local environment on fast radio burst observations”