

CURRICULUM VITAE

Priyamvada Natarajan

Departments of Astronomy & Physics
Yale University

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EDUCATION

1994 – 1999: Ph.D. in Astrophysics from the Institute of Astronomy, University of Cambridge, Cambridge, U.K. Thesis advisor: Professor Martin Rees

1991 - 1994: Master of Science (S.M.) awarded by the Program in Science, Technology & Society at the Massachusetts Institute of Technology, Cambridge, MA, U.S.A.

1986 – 1991: Bachelor of Science in Physics (Course VIIIA) & Bachelor of Science in Mathematics from the Massachusetts Institute of Technology, Cambridge, MA, U.S.A.

ACADEMIC & ADVISORY POSITIONS

2024 - 2027: Member, Scientific Advisory Committee, IUCAA, Pune, India.

2022 - present: Joseph S. and Sophia S. Fruton Professor of Astronomy & Physics, Yale University.

2022 - 2025: Chair, Department of Astronomy, Yale University.

2021 - present: External PI, The Black Hole Initiative, Harvard University, Cambridge, MA 02138.

2021 - present: Editorial Board & Science Editor, Extra-galactic Astrophysics and Cosmology, The American Astronomical Society Journals.

2021 - 2022: Chair, National Astronomy and Astrophysics Advisory Committee to NASA, NSF and DoE.

2019 - 2022: Member, National Astronomy and Astrophysics Advisory Committee to NASA, NSF and DoE.

2019: Simons Distinguished Visiting Professor at the International Center for Theoretical Sciences, Bangalore, India.

2019: Distinguished Visiting Professor at the Institute for Astronomy, Manoa, Hawaii.

2019 - 2020: Director of Undergraduate Studies, Department of Astronomy, Yale University, New Haven, CT.

2018 - present: Advisor, The John Simon Guggenheim Foundation, New York.

2017 - present: Member, NASA LISA Science Team, NASA.

2017 - 2022: Member, International Advisory Committee of the Higgs Center for Fundamental Physics, Edinburgh, Scotland.

2017 - present Director, Franke Program in Science and the Humanities, Yale University.

2017 - present Associate, Flatiron Institute, Center for Computational Astrophysics, New York, NY.

2017 –2020: Chair Line, Division of Astrophysics, American Physical Society.

2014 –2017: Director of Undergraduate Studies, Department of Astronomy, Yale University, New Haven, CT.

2015 –2017: Chair, Yale College Science Council.

2013 - present: Primary Investigator of the International CATS Scientific Collaboration.

2012: Honorary Professorship (lifetime appointment), University of Delhi, New Delhi, India.

2011 - 2014: Chair, Womens Faculty Forum, Yale University, New Haven, CT.

2011 – 2012: Caroline Herschel Distinguished Visitor, Space Telescope Science Institute, Baltimore, MD.

2010 – 2011: Visiting Professor, Institute for Theory and Computation, Harvard University, Cambridge, MA.

2010 – 2011: Visiting Fellow, Joint Institute for Laboratory Astrophysics, University of Colorado at Boulder, Boulder, CO.

2009 – present: Sophie and Tycho Brahe Professorship, DARK Cosmology Center, Niels Bohr Institute, Copenhagen, Denmark:

2009 – present: Professor, Departments of Astronomy & Physics, Yale University, New Haven, CT, U.S.A.

2007 – 2010: Director of Graduate Studies, Department of Astronomy, Yale University, New Haven, CT, U.S.A.

2005 – 2008: Associate Professor of Astrophysics at Yale University, New Haven, CT, U.S.A.

2005 – present: Member, Scientific Advisory Board, Petters Research Institute, Belize.

2005 – present: Associate, Dark Cosmology Centre, Niels Bohr Institute, University of Copenhagen, Denmark.

2004 – 2005: Long-term visitor at the Institute for Advanced Study, Princeton, NJ, U.S.A.

2002 – 2003: Visiting Professor, Institute of Astronomy & Trinity College, Cambridge, U.K.

2000 – 2005: Assistant Professor of Astrophysics, Department of Astronomy, Yale University, New Haven, CT, U.S.A. and a joint appointment in the Department of Physics.

1998: Visiting fellow at the Canadian Institute for Theoretical Astrophysics, Toronto, Canada.

1997 – 2003: Title A Research Fellowship, Trinity College, Cambridge, U.K.

HONORS & AWARDS

2024: Fellow, American Astronomical Society.

2023: New England Choice Award for Excellence and Achievement in Science.

2023: Fellow, American Academy of Arts & Sciences.

2023: Fellow, American Association for the Advancement of Science.

2022: Genius Award, The Liberty Science Center Foundation, Jersey City, New Jersey.

2022 -: Named the Inaugural Joseph and Sophia Fruton Professor of Astronomy & Physics at Yale University.

2021 - 2022: Awarded the Schrodinger Visiting Chair, Pauli Center for Theoretical Physics, ETH and the University of Zurich, Switzerland.

2021 - 2026: Elected General Member, Aspen Center for Physics, Aspen, Colorado.

2021: Invited plenary speaker at the Sixteenth Marcel Grossmann Meeting on General Relativity.

2021: Annual Lakshmi Raman Memorial Lecture at IIT, Madras, India.

2021: Invited plenary speaker at the Annual Meeting of the American Astronomical Society.

2021: Annual Nelson Lecture, Georgia State University.

2019: Annual McLennan Lecture, St. Mary's University, Halifax, Canada.

2019: Annual C.V. Vishveshwara Lecture, International Center for Theoretical Science, Bangalore, India.

2019: Annual CIERA Distinguished Lecture, Northwestern University, Evanston, IL.

2019: Invited to present and show the VR experience, *Lunatick* at the Venice Biennale, Venice, Italy.

2019: Invited speaker, World Forum, Boulder, CO.

2019: Distinguished Immigrant Award, State of Connecticut, Hartford, CT.

2019: Invited Speaker at the University of Hawaii's *Better Tomorrow Distinguished Speaker Series*, & Distinguished Visiting Professor, Institute for Astronomy, Honolulu, Hawaii.

2019: Annual Bartlett Lecture at the Frontiers of Science, Linda Hall Library of Science, Kansas City, Missouri.

2018: Gustav Ranis International Book Prize for book *Mapping The Heavens* from MacMillan Center for International Studies, Yale.

2018: The WTMA Roy Moon Distinguished Lecture, San Angelo, TX.

2017: Kameshwar Wali Lecture, Syracuse University, Syracuse, NY.

2017: The Annual Smithsonian Lecture, Washington D.C.

2017: Finalist, Physics World's Best Science Books of the Year for book *Mapping the Heavens*; Honorable Mention Award, American Publishers Association for book *Mapping the Heavens*.

2017: Benjamin Dean Lecturer, California Academy of Sciences, San Francisco, CA.

2016: Invited Opening Speaker, Aspen Ideas Festival, Aspen, CO.

2015: Subrahmanyan Bharati Award for Achievement in the Sciences from the Vanavil Cultural Foundation, Chennai, India.

2015: Tamil-American Pioneer Award, Foundation of Tamil Americans, San Jose, CA.

2013: The Niels Bohr Lecture at the Niels Bohr Institute, University of Copenhagen, Denmark.

2013: Distinguished Visitor, Morningside College, Hongkong, P.R.C.

2012 – present: Member, Advisory Board, for ScienceNow, NOVA; Scientific American & Quanta Magazine.

2012 – 2014: Advisor, Science & Technology futures panel, Planning Commission, Government of India.

2012: Paco Yndurian visiting fellowship, Department of Theoretical Physics, UAM, Madrid, Spain.

2012 - present: Election to an honorary professorship for life at the University of Delhi, Delhi, India.

2011: India Empire NRI Award, India Empire Foundation.

2010 - present: Board Member, Indiaspora Foundation.

2010: Face of the Future Award, The India Abroad Foundation.

2009: Award for Academic Achievement from the Global Organization of People of Indian Origin (GOPIO).

2020: Elected Member, Aspen Center for Physics.

2019: Invited Distinguished Visiting Fellow in Science & Art, Royal Academy of Art, London, U.K.

2014: Elected Fellow of the Board for the Edge Foundation for Gender Equity in the Workplace, Zug, Switzerland.

2011 — 2012: Fellowship at the Rockefeller Bellagio Center, Bellagio, Italy.

2011: Fellow, American Physical Society.

2010: Fellow, Explorers Club.

2009: Guggenheim Fellowship, John Simon Guggenheim Foundation.

2008: Emeline Bigelow Conland Fellow & Bunting Fellow, Radcliffe Institute for Advanced Study, Harvard University.

2008: Fellow, Royal Astronomical Society.

2006: Whitney Humanities Fellowship at Yale University.

2006: Kavli Frontiers Fellow, National Academy of Sciences.

2003: Resident Faculty Fellow at Saybrook College, Yale University.

1997: Elected to Title A Research Fellowship, Trinity College.

1993: Fellow, Cambridge Philosophical Society & Cambridge Commonwealth Society.

1993: Awarded the Isaac Newton Studentship, University of Cambridge.

1993: External Research Studentship, Trinity College.

1991: Ida Green Fellowship, Massachusetts Institute of Technology.

1990: The Carroll Wilson Award, Massachusetts Institute of Technology.

1989: Elected to National Honor Societies - Tau Beta Pi, Sigma Pi Sigma and Sigma Xi.

1988: Peter J. Eloranta Award for Undergraduate Research and the Burchard Fellowship, Massachusetts Institute of Technology.

KEY RESEARCH CONTRIBUTIONS

GRAVITATIONAL LENSING

Lens Inversion Methods: developed many of the fundamental techniques for reconstructing cluster mass distributions with lensing; pioneered the combination of strong and weak lensing analysis techniques; first calculation of contaminants to weak lensing observations from intrinsic alignments; developed methodology and key early contributor to high-resolution dark matter mapping code *Lenstool*; first estimate of the role of structure along the line of sight in lensing; first application of Jeans analysis using lensing to probe the dynamics of galaxy-clusters and co-author of the commissioned annual reviews article on Cluster-lenses.

Cluster mass modeling: early forecasts for HST cluster surveys and quantification of the accuracy of lensing mass reconstructions; a key architect of the Hubble Frontier Fields Initiative (HFFI); led the effort on comparison of lens modeling methodologies and the production of publicly available magnification maps for the HFFI; refined techniques to use caustic areas to determine cluster virial masses; derived criteria for virialization and relaxation during cluster mass assembly; characterizing equilibrium; and a leader in constructing the highest fidelity mass profiles for cluster-lenses.

Substructure as a probe of dark matter: Proposed and pioneered the use of small scale structure within cluster-lenses as a test of the LCDM paradigm; detailed studies of the assembly of clusters in cosmological simulations; helped exploit cluster-lenses as astrophysical laboratories to study dynamical processes like ram pressure stripping and tidal stripping; established expert in the comparison of lensing observations to cosmological simulations; have proposed several new metrics to probe small-structure in the cluster-lenses.

Cosmography with lensing: Pioneered the use of cluster strong lensing to constrain both dark matter and dark energy; computed the detailed lensing systematics for the use of clusters as cosmological probes; developed the use lensing arc-statistics to probe non-gaussianity; and quantified the scatter in the derived scaling relations for cluster lenses and their impact on the determination of cosmological parameters.

FORMATION, FUELING & FEEDBACK FROM BLACK HOLES

Black hole formation & growth: early work on the physics of accretion, key first calculation of the role of BH and accretion disk spin alignments and frame-dragging; first to propose and calculate multiple new channels for the formation of seed black holes - first calculation of the initial mass function of Direct Collapse Black Holes and Intermediate Mass Black Holes (formed from supra-Eddington accretion on early seeds) and their continual formation over cosmic time in dense nuclear star clusters; leader in detailed modeling of properties and observational signatures of direct collapse black holes and inter-mediate mass black holes; and have made key testable predictions for discriminating these seed formation mechanisms.

Issues in galaxy formation: proposed new mechanisms to couple scales - between disks and jets in AGN and between quasars and their large-scale environment via outflows; predicted a kinematic Sunyaev-Zeldovich effect from quasar outflows that has been detected by ALMA; same model predicted the formation of dark matter deficient dwarf galaxies from fragmentation of quasar outflows; early speculations on the detailed relationship between star formation and AGN activity proposed for co-evolution; predicted the variation of mass-to-light ratios of galaxies as a function of cosmic environment.

Co-evolution of galaxies and their black holes: pioneered the integration of the growth of central black holes with the assembly of their host galaxies in the larger context of structure formation in the universe; first calculation of feedback and limits to black hole growth in the early and late universe; lead

the demographic studies of the growth and evolution of black hole populations tracing correlations and probing the origin of co-evolution and signatures in early black holes; demonstrated that several new probes to test high-redshift seeding models exist ranging from occupation fraction, to LISA merger rates and deep X-ray number counts.

Multi-messenger Astrophysics: the first simulation of the merger and evolution of supermassive black hole binaries in gas-rich galaxy cores demonstrating short merger time-scales; computation of the electro-magnetic and gravitational wave signatures from these systems; detailed study of gas-driven mergers and the evolution of eccentricity in binary black hole mergers; made first predictions for observational constraints on black hole seed formation from JWST and other multi-wavelength (X-ray) and gravitational wave data (LISA).

Machine Learning & Data-driven discovery: Leading development of new machine learning tools and database *QuasarNet* that co-locates observational and simulated data to explore the black hole - host galaxy - parent dark matter halo connection; on-going work in collaboration with Google-X and the Google Computing Platform.

COMMITTEE & LEADERSHIP EXPERIENCE

Fall 2023 - present: Invited nominator for the Swedish Academy of Sciences; Invited nominator for the Norwegian Academy of Sciences; Advisor, Radcliffe Fellowship, Harvard University; Advisory Committee, Guggenheim Fellowship, Guggenheim Foundation; External Advisor, Simons Foundation; External Advisory Board, Quanta Magazine; Member, Advisory Committee, Catalyst Collective@MIT; Member, Editorial Board, The Astrophysical Journal; Co-Lead Science Working Group on Black Holes and their Cosmic Context for the next generation Event Horizon Telescope (ngEHT) project; Member, Project Advisory Committee, ngEHT; Member, LISA Consortium.

Fall 2022 - present: Invited nominator for the Swedish Academy of Sciences; Invited nominator for the Norwegian Academy of Sciences; Invited nominator Kyoto Prize, Advisor, Radcliffe Fellowship, Harvard University; Advisory Committee, Guggenheim Fellowship, Guggenheim Foundation; External Advisor, Simons Foundation; External Advisory Board, Quanta Magazine; Member, Advisory Committee, Catalyst Collective@MIT; Member, Editorial Board, The Astrophysical Journal; Co-Lead Science Working Group on Black Holes and their Cosmic Context for the next generation Event Horizon Telescope (ngEHT) project; Member, Project Advisory Committee, ngEHT; Member, Detection Committee, International Pulsar Timing Array Consortium; Member, LISA Consortium.

Fall 2021 - present: External Advisory Board, Quanta Magazine; Expert Reviewer for Science; Member, Editorial Board, The Astrophysical Journal; Co-Lead Science Working Group on Black Holes and their Cosmic Context for the next generation Event Horizon Telescope (ngEHT) project; Advisor, Radcliffe Fellowship, Harvard University; Advisory Committee, Guggenheim Fellowship, Guggenheim Foundation; Member, Detection Committee, International Pulsar Timing Array Consortium; Member, LISA Consortium.

Fall 2020 - present: Advisory Board Member, Presidential Task-Force on Education beyond 2021, M.I.T.; Advisory Board of Quanta Magazine; Expert Reviewer for Science & Nature; External Expert Grant Reviewer Israeli National Science Foundation; External Expert Grant Reviewer for the European Union's Innovation Research Incentive Scheme; Advisor, Radcliffe Fellowship, Harvard University; Advisory Committee, Guggenheim Fellowship, Guggenheim Foundation; External Expert Reviewer for the Hawking Fellowship, EPSRC/STFC, UKRI, U.K.

Fall 2019 - present: Invited Panelist, Implementing Dual Anonymous Review in Astrophysics Workshop at Space Telescope Science Institute, member of the 2020 jury for PEN America's E.O. Wilson Literary Science Writing Award; Advisory Committee, Guggenheim Fellowship, Guggenheim Foundation; Member International Search Committee for selection of the Inaugural Higgs Chair at the University of Edinburgh, U.K.

Summer 2019: Principal Organizer of Aspen Summer Workshop titled Progress after impasse: new frontiers in dark matter; Lead Organizer for Black Hole Science in the LISA era at the Flatiron Institute in New York; Member of the Advisory Board for Scientific American; Expert Reviewer for Science & Nature; External Expert Grant Reviewer for the European Union's Innovation Research Incentive Scheme.

Fall 2018 - present: Director, Franke Program in Science and the Humanities at Yale University, catalyzed and seeded several cross-disciplinary research programs and collaborations; mentor and nurture inter-disciplinary Franke undergraduate, graduate and post-doctoral fellows.

Fall 2018: Super-TAC Chair for HST Cycle 26 first double-blind proposal review in the Physical Sciences; Member of inaugural jury for the JCB International Prize for Literature; External Expert Grant Reviewer for the European Union's Innovation Research Incentive Scheme; Advisory Committee, Guggenheim Fellowship, Guggenheim Foundation.

Spring 2018: Invited lecturer at the Kavli Summer Program in Astrophysics at the Center for Computational Astrophysics at the Flatiron Institute (June 2018); Co-organizer of workshop on *Eternal Multi-Messenger Workshop* at the Flatiron Institute.

Fall 2017: Member, Higgs Center International Advisory Committee, University of Edinburgh, Scotland; Selected member of the NASA LISA Science Team and invited to serve on the International Scientific Advisory Committee for conference on AGN Activity through cosmic time at Durham University, Durham, U.K.

Spring 2017: Scientific organizing committee for conference on Tidal Disruption, Cambridge, U.K. and Workshop on Titans of the early universe, Prato, Italy; Scientific Organizing Committee of Annual NAM session on Dark Matter, Hull, U.K.; External Expert Grant Reviewer for the European Union's Innovation Research Incentive Scheme.

Summer 2016: Co-Organizer of Aspen Summer Program titled *Emergence, Evolution and Effects of Black Holes in the Universe: The Next 50 years of Black Hole Physics*; Co-organizer of Radcliffe Exploratory Workshop titled *Rethinking Dark Matter*.

Spring 2016: Scientific Organizing Committee for JSI conference on EWASS workshop on the Lensing and HST Frontier Fields: a progress report; Thesis Evaluation Committee for the University of Zurich; Tenure Ad-Hoc Committee for Harvard University, Department of Astronomy; External Grant Reviewer for Department of Energy; External Grant Reviewer for NASA; Grant Reviewer for the Physical Sciences for the John Templeton Foundation.

Spring 2015: Scientific Organizing Committee for JSI conference on Active Black Holes, Conference on Future X-ray Surveys; Co-Chair, Special Meeting at the IAU2015 on HST Frontier Fields; Member Selection Committee for Professorship in Astrophysics at the University of Oslo; Member of the International Association of Research Universities (IARU) Advisory Group on Gender Equity; Advisor on Gender Equity and Inclusion for the Swiss National Science Foundation; External Reviewer HST Time Allocation Committee and Thesis Evaluation for University of Melbourne, Department of Astronomy.

Spring 2014: Scientific Organizing Committee, conference The Physics of first star and galaxy formation, at the Higgs Center for Theoretical Physics, University of Edinburgh, Scotland.

Fall 2014: Co-Chair Scientific Organizing Committee for the Yale Frontier Fields Workshop, New Haven; Scientific Organizing Committee, conference titled "Einstein's Legacy: celebrating General Relativity", India; Member, Alumni Task Force on the Future of an MIT Education; Member, Grant Review Panel for the NASA Astrophysical Theory Program; Scientific Organizing Committee for a Special Session at the International Astronomers Union (IAU) Meeting on the HST Frontier Fields; Invited Member, Science Definition Team of proposed X-ray satellite SMART-X.

Spring 2013: Chair, Scientific Organizing Committee for workshop titled Cluster Lensing Peering in the Past and Prospects for the Future held at the Space Telescope Science Institute, Baltimore; Organizing committee of the Cosmology Summer School at University of California at Santa Cruz; Member, Grant Review Panel for the National Science Foundation's Astrophysics division.

Fall 2013: Group Leader for black hole formation at the KITP Program on Black Holes at Santa Barbara; Organizing Committee member for the panel on Gender Equity in Higher Education at the International Association of Research Universities (IARU) bi-annual meeting at ETH in Zurich; Scientific Organizing Committee for Cosmology Winter School in Durban, South Africa.

Fall 2012: Chair, Scientific Organizing Committee, conference titled 'Cluster Lensing: Peering into the Past, Planning for the Future' at STScI, Baltimore in 2013; Member, International Search Committee for the Niels Bohr Chair in Astronomy at the University of Copenhagen, Denmark; Scientific Organizing Committee, conference titled 'Reionization in the Red Center: New windows on the high redshift Universe' in Ayers Rock, Australia 2013; Member, Hubble Space Telescope Deep Fields Initiative Committee, STScI.

Spring 2012: Co-organizer, conference on Gender Parity titled 'Parity as Practice: The Politics of Equality' at Yale Law School in March; Scientific Organizing Committee, conference titled *Origins of the Expanding Universe 1912-1932* at Lowell Observatory, Arizona.

Fall 2011: Chair, Organizing Committee for inter-disciplinary conference titled *Why is there anything in the universe?*, held at Yale University, New Haven.

Spring 2011: Chair, Scientific Organizing Committee for workshop titled 'DEUS: Current and Future Challenges of the Early and Dark Universe' held at the Niels Bohr Institute, Copenhagen, Denmark; Chair, Cosmology Panel for Time Allocation on the Hubble Space Telescope, NASA.

Spring 2010: Member, Proposal Review Committee for National Science Foundation, Department of Energy and NASA; Member, Hubble Fellowship Selection Committee and Time Allocation Committee for Cycle 18 of the Hubble Space Telescope.

Fall 2009: Chair, Scientific Organizing Committee for meeting titled 'Angular Momentum Transport and Energy Release in Accretion Discs' held at the Institute of Astronomy at the University of Cambridge, Cambridge, U.K.; Member, Proposal Review Committee for the NASA Astrophysical Theory Program.

Summer 2009: Co-organizer of Joint Discussion session titled 'Dark Matter in Early-type Galaxies' for the International Astronomers Union, General Assembly in August 2009.

Spring 2008: Member, Proposal Review Committee for the Department of Energy; Member, Official Yale delegation to the International Association of Research Universities meeting held at Yale University, New Haven; Member of National Science Foundation post-doctoral fellowship selection panel.

Spring 2007: Member of National Science Foundation grant selection panel for assessing theory proposals; Scientific Organizing Committee for the workshop on Astrophysical Probes of the Nature of Dark Matter held in March 2007 at the Center for Cosmology, University of California, Irvine.

Summer 2006 - present: Scientific Advisory Board of SCIENCENOW at NOVA, WGBH Boston.

Summer 2006: Member of International Scientific Organizing Committee of the 'Marseille Cosmology Conference 2007' held at Marseille, France; Member of National Science Foundation post-doctoral fellowship selection panel.

Summer 2004: Member of International Scientific Organizing Committee of the conference 'The Quest for a Concordance Cosmology and beyond' held at Cambridge, U.K.

Summer 2002: Member of International Scientific Organizing Committee of the conference ‘Making Light of Gravity’ held at Cambridge, U.K.

Summer 2001: Organized an international conference titled *The Shapes of Galaxies and their Dark Matter Halos* from 28th - 31st May 2001 at Yale, attended by over 80 participants. Editor of the conference proceedings published by World Scientific (2002).

Spring 2001 - 2006: Member of the Advisory Committee for the American Association for the Advancement of Science’s (AAAS) Program of Dialogue on Science, Ethics and Religion.

Fall 1999: Member of the Extra-Galactic Time Allocation Committee (TAC) for the Cycle 9 Program of the Hubble Space Telescope.

LEADERSHIP ACTIVITIES RELEVANT TO EQUITY & INCLUSION

Former Chair of the Womens Faculty Forum at Yale (2011-2014), an inter-departmental advocacy group reporting to the Provost; pioneered and piloted many initiatives - peer mentoring and side-step mentoring now adopted by the University; Member, Steering Committee of WFF since 2003; Co-organized two conferences supported by the Gruber Foundation on Parity as Practice: The Politics of Equality and Contesting Gender Inequalities; awarded grant from The Sloan Foundation, conducted a gender equity assessment of the Faculty of Arts & Sciences at Yale in collaboration with Edge Strategy, Switzerland, the results of which led to major institutional change and new policies.

Currently the President of the Board of the non-profit Edge Foundation, Zug, Switzerland that works toward gender equity in the workplace.

As Co-Chair of the Womens Faculty Forum Working Group on Sexual Misconduct, developed and co-authored with Co-Chair Prof. Connie Bagley, School of Management the guidelines for dealing with sexual misconduct that eventually catalyzed the formation of Yale’s University Wide Committee dealing with Sexual and Ethical misconduct.

As Chair of the Division of Astrophysics of the American Physical Society, spear-headed the re-naming of the dissertation prize to the Cecilia Payne-Gaposchkin Prize and helped fund-raise for it from the Heising-Simons Foundation.

Helped with the organization of and Chaired the Time Allocation Committee for the Hubble Space Telescope and oversaw the first double-blind review process in the physical sciences in the United States; Invited Speaker at the workshop hosted by STScI for NSF, NASA, DoE, DoD, ESO, ESA and other international funding agencies exploring phasing in double-blind proposal reviews.

Serve on the External Advisory Board for the NSF-ADVANCE grant program that addresses gender equity and institutional change for the University of Massachusetts, Amherst (2018-2023).

Have mentored and continue to mentor several young URM scholars in Astronomy and Astrophysics as well as Theoretical Physics in the United States, Europe and India.

RECENT GRANTS

Summer 2024 - 2026: JWST SLICE Program to study cluster substructure.

Summer 2024 - 2026: JWST GLIMPSE Program to probe early galaxy formation and sources of reionization.

Summer 2024 - 2027: NASA ADAP, Probing the dynamical state of galaxy clusters.

Fall 2024 - 2026: Heising-Simons Foundation Post-doctoral Support Grant.

Summer 2023 - 2026: Yale High-Energy Physics Block Grant, Department of Energy.

Summer 2022- 2025: Sub-award as External PI from the Black Hole Initiative, Harvard University.

Summer 2021 - 2025: Sub-award from the Black Hole Initiative, Harvard University.

Summer 2020 - 2024: Grant from the John Templeton Foundation's Big Ideas Program for inter-disciplinary project titled Understanding the nature of inference.

Summer 2019 & Summer 2020: Summer Intern supported by GoogleX at Mountain View Campus to work on new machine learning platform.

Spring 2019: Recipient of a grant for the pilot phase for a project on creating a next-generation research tool QuasarNet for black hole physics by Google-X.

Fall 2018: Recipient of a grant from HST Theory Program for the project on titled Crisis in Cold Dark Matter?.

Fall 2017: Recipient of a grant from NASA via the Space Telescope Science Institute for BUFFALO - a large observational program.

Summer 2016: Recipient of a Mapmaker grant from NASA via the Space Telescope Science Institute to produce magnification maps for the Frontier Fields Program.

Summer 2015, 2016: Recipient of a sub-award from Jet Propulsion Laboratory to perform simulations of HST Frontier Fields Lensing Clusters.

Summer 2015: Recipient of a Mapmaker grant from NASA via the Space Telescope Science Institute to produce magnification maps for the Frontier Fields Program.

Fall 2013: Co-Principal Investigator of a TCAN (Theoretical and Computational Astrophysics Network) grant from the National Science Foundation for project titled The multi-scale physics of massive black holes.

Fall 2012: Principal Investigator on grant from Sloan Foundation titled Diagnosing the Pressure Points Along the Academic Pipeline for Women; Co-Investigator on grant (Yale, Rutgers, Columbia University) titled Big Questions in the Philosophy of Cosmology funded by the John Templeton Foundation.

Spring 2011: Principal Investigator on grant titled Epistemological problems in cosmology and Co-Investigator on the conference grant titled Why is there anything in the Universe? funded by the Nour Foundation.

Summer 2010: Principal Investigator on project titled Cosmography with cluster strong lensing funded by National Science Foundation (NSF); Principal Investigator on HST theory project Probing the relation between mass and light using flexion, Cycle 18 Theory Program of the Hubble Space Telescope; Co-Investigator on HST project An in-depth study of dark matter in the massive cluster merger MACSJ0358.8-2955, Cycle 18 Theory Program of the Hubble Space Telescope.

LIST OF PUBLICATIONS

Citation Statistics from NASA ADS: Total number of citations - 20,109

Number of papers: 218 (as of January 17, 2024)

h-index: 82; i-10 index: 172

1. Natarajan, Priyamvada et al., 2024.
Strong Lensing By Galaxy Clusters
Space Science Reviews, 220, 19, *arXiv2403.06245*.

2. Tokayer, Yarone; Dutra, Isaque; Natarajan, Priyamvada; Mahler, Guillaume; Jauzac, Mathilde; Meneghetti, Massimo, 2024.
The Galaxy-Galaxy Strong Lensing cross section and the internal distribution of matter in LCDM substructure
ApJ, *under review*.
3. Fu Shenming; et al., 2024.
LoVoCCS – II. Weak Lensing Mass Distributions, Red-Sequence Galaxy Distributions, and Their Alignment with the Brightest Cluster Galaxy in 58 Nearby X-ray-Luminous Galaxy Clusters
submitted ApJ, *arXiv2402.10337*.
4. Burke, Colin; Liu, Yichen; Ward, Charlotte; Natarajan, Priyamvada; Greene, Jenny; 2024.
Dwarf AGNs from Variability for the Origins of Seeds (DAVOS): Properties of Variability-Selected AGNs in the COSMOS Field and Expectations for Rubin Observatory
ApJ under review, *arXiv240206882B*.
5. Chowdhary, Rudrani Kar; Chang, Janet; Dai, Lixin & Natarajan, Priyamvada, 2024.
Detecting Population III Stars through Tidal Disruption Events in the Era of JWST and Roman
submitted ApJ, *arXiv240112752C*.
6. Natarajan, Priyamvada; Pacucci, Fabio; Ricarte, Angelo; et al., 2024.
First Detection of an Over-Massive Black Hole Galaxy: UHZ1 – Evidence for Heavy Black Hole Seeds From Direct Collapse?
ApJ Letters, *960*, *L1*.
7. Natarajan, P; et al. 2023.
Introducing QUOTAS as a new research platform for the data-driven discovery of supermassive black holes *Nature Astronomy*, *7*, *879*
8. Cho, Hyerin; Prather, Ben; Narayan, R; Natarajan, P; et al. 2023.
Bridging Scales in Black Hole Accretion and Feedback: Magnetized Bondi Accretion in 3D GRMHD *ApJ Letters*, *959*, *22*.
9. Pirzkal, N; et al. 2023.
The Next Generation Deep Extragalactic Exploratory Public Near-Infrared Slit-less Survey Epoch 1 (NGDEEP-NISS1): Extra-Galactic Star-formation and Active Galactic Nuclei at 0.5 $\leq z \leq$ 3.6
under review, *The Astrophysical Journal*, *arXiv:2312.09972*.
10. Leung, Gene., et al. 2023.
NGDEEP Epoch 1: The Faint End of the Luminosity Function at $z \sim 9-12$ from Ultradeep JWST Imaging *ApJ Letters*, *954*, *46*.
11. Bodgan, Akos; Goulding, Andy; Natarajan, Priyamvada; et al., 2024.
Evidence for heavy seed origin of early supermassive black holes from a $z \sim 10$ X-ray quasar *Nature Astronomy*, *8*, *126*.
12. Bagley, Micaela., et al., 2023.
The Next Generation Deep Extragalactic Exploratory Public (NGDEEP) Survey
accepted ApJ, *arXiv:2302.05466*.
13. Galison, Peter., et al., 2023.
The Next Generation Event Horizon Telescope Collaboration: History, Philosophy, and Culture
Galaxies, *11*, *32*.
14. Beauchesne, Benjamin., et al. 2023.
A new step forward in realistic cluster lens mass modelling: Analysis of Hubble Frontier Field Cluster Abell S1063 from joint lensing, X-ray and galaxy kinematics data
MNRAS, *527*, *3246*.

15. Meneghetti, Massimo et al., 2023.
A persistent excess of galaxy-galaxy strong lensing observed in galaxy clusters
A&A Letters, 678, 2.
16. Allen, Bruce., et al., 2023.
The International Pulsar Timing Array checklist for the detection of nanohertz gravitational waves
available at arXiv:23004.04767.
17. The International Pulsar Timing Array Collaboration+, 2023.
Comparing recent PTA results on the nanohertz stochastic gravitational wave background
under review ApJ, arXiv:2309.00693.
18. Chen, Nianyi, et al., 2023.
Flyby Galaxy Encounters with Multiple Black Holes Produce Star-forming Linear Features
ApJ Letters, 954, 2.
19. Goulding, Andy., et al., 2023.
UNCOVER: The growth of the first massive black holes from JWST/NIRSpec – spectroscopic
redshift confirmation of an X-ray luminous AGN at $z=10.1$
ApJ Letters, 955, 24.
20. Tremmel, Michael; Ricarte, Angelo; Natarajan, Priyamvada., et al. 2023 .
An Enhanced Massive Black Hole Occupation Fraction Predicted in Cluster Dwarf Galaxies
under review OJA, arXiv:2306.12813.
21. Agazie, Gabriella., et al., 2023.
The NANOGrav 15-year data set: Search for Transverse Polarization Modes in the
Gravitational-Wave Background
submitted, arXiv:2310.12138.
22. Agazie, Gabriella., et al., 2023.
The NANOGrav 15-year Data Set: Bayesian Limits on Gravitational Waves from Individual
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182. Limousin, Marceau; Kneib, Jean-Paul & Natarajan, Priyamvada, 2005.
Constraining the Mass Distribution of Galaxies using Galaxy-Galaxy Lensing in Clusters and in the Field,
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Constraints on the Collisional Nature of the Dark Matter from Gravitational Lensing in the Cluster A2218,
ApJ, 580, L17.

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Probing the Mass Distribution in Groups of Galaxies using Gravitational Lensing,
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ApJ, 567, L9.
197. Goldberg, David & Natarajan, Priyamvada, 2002.
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ApJ, 564, 65.
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ApJ, 568, 20.
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A&A, 371, 52.
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ApJ, 559, 552.
201. Natarajan, Priyamvada; Crittenden, Robert; Pen, Ue-Li & Theuns, Tom, 2001.
Do Angular Momentum Induced Ellipticity Correlations Contaminate Weak Lensing
Measurements?
PASP, 18, 198.
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MNRAS, 318, L21.
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Hubble Space Telescope Space Telescope Imaging Spectrograph Imaging of the Host Galaxy of
GRB 980425/SN 1998BW,
ApJ, 542, L89.
204. Natarajan, Priyamvada & Refregier, Alexandre, 2000.
Two-dimensional Galaxy-Galaxy Lensing: a direct measure of the flattening and alignment of
light and mass in galaxies,
ApJ, 538, L113.
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Gamma-ray Bursts and the history of Star Formation,
MNRAS, 312, L35.
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Lense-Thirring precession of accretion disks of Accretion Disks around Compact Objects, *ApJ*, 525, 909.
209. Natarajan, Priyamvada, 1999.
Consequences of feedback from early supernovae for disk assembly, *ApJ*, 105, L512.
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The alignment of disk and black hole spins in active galactic nuclei, *ApJ*, 506, L97.
211. Haehnelt, Martin; Natarajan, Priyamvada & Rees, Martin, 1998.
High-redshift galaxies, their active nuclei and central black holes, *MNRAS*, 300, 817.
212. Natarajan, Priyamvada & Sigurdsson, Steinn, 1998.
Sunyaev-Zeldovich decrements with no clusters? *MNRAS*, 302, 288.
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The Mass-to-Light Ratio of early-type Galaxies: Constraints from Gravitational Lensing in the Rich Cluster AC114, *ApJ*, 499, 600.
214. Natarajan, Priyamvada; Sigurdsson, Steinn & Silk, Joseph, 1998.
Quasar outflows and the formation of dwarf galaxies, *MNRAS*, 298, 577.
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Gamma-ray bursts from stellar remnants: probing the Universe at high redshift, *MNRAS* 294, L13.
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Estimating the mass density in neutral gas at $z < 1$, *MNRAS*, 291, L28.
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The Host to Gamma-Ray Burst 970508: a Distant Dwarf Galaxy? *NEW ASTRONOMY*, 2, 471.
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Lensing by galaxy halos in clusters of galaxies, *MNRAS*, 287, 833.
219. Natarajan, Priyamvada; Hjorth, Jens & van Kampen, Eelco, 1996.
Distribution Functions for Clusters of Galaxies from N-body Simulations, *MNRAS*, 286, 329.
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An analytic approximation to the Isothermal Sphere, *MNRAS*, 286, 268.
221. Natarajan, Priyamvada & Kneib, Jean-Paul, 1996.
Probing the dynamics of Cluster-lenses, *MNRAS*, 283, 1031.

INVITED REVIEWS

Early Black Holes (2025), in preparation for Physics Reports.

Cluster Lenses: Nature's Telescopes (2025), in preparation for Nature.

The First Black Holes (2017), appeared as cover article for Scientific American in February 2018.

The formation of the first black holes in the Universe (2013)

GR20/Amaldi 10 proceedings, published in Gravitation and Cosmology.

The formation and evolution of black hole seeds in the early Universe (2011)

Bulletin of the Astronomical Society of India, Chandra Centennial Volume, arXiv:1104.4797

Cluster lenses (2011)

The Astronomy & Astrophysics Review, Volume 9, 47, Springer.

The mass assembly history of black holes in the Universe (2011)

American Institute of Physics, Proceedings of the Congress of Philosophy and Foundations of Science XV - International Program 'Frontier Areas of Research Excellence'

Modeling the accretion history of supermassive black holes (2004)

In: *Supermassive Black Holes in the Distant Universe*, ed. A. J. Barger, Kluwer Academic Publishers.

BOOKS

Natarajan, Priyamvada (2018)

Manuscript in Progress, Penguin Random House, to be published in 2025.

Natarajan, Priyamvada (2022)

Adventures Mapping the Dark Universe, Biographical Chapter in *The Sky Is for Everyone. Women Astronomers in Their Own Words*, Princeton University Press.

Natarajan, Priyamvada (2016)

Mapping the Heavens: radical ideas that reveal the cosmos Yale University Press, published Summer 2016.

Natarajan, Priyamvada (2002)

Editor: *The Shapes of galaxies and their dark matter halos* Proceedings of the Yale Cosmology Workshop, World Scientific.

RECENT OTHER PUBLICATIONS

Essays for New York Review of Books titled *In Search of Planet X*, published in 2019; and essay titled *What's the matter with matter*, published in 2021.

Catalog Essay for Antony Gormley Retrospective at the Royal Academy of Art, London, U.K. to be published in September 2019.

Opinion piece titled "At Long Last, a Glimpse of a Black Hole" in the New York Times, published on April 9, 2019.

Book reviews in the Wall Street Journal December 2023, April 2021, March 2020, February 2020, June 2018; December 2018, May 2019, March 2021, March 2022, December 2023.

Invited cover article for Scientific American February 2018, *The Puzzle of the First Black Holes*, republished in Special Issue title *Extreme Physics* in April 2019.

Invited pieces for Nautilus Magazine & Discover Magazine.

Invited Book Essays in the New York Review of Books titled *What Scientists Really Do; Revelation from Outer Space; Einstein at 100; Calculating Women* and *Exploration of Near & Far Worlds*.

Invited blog pieces for the New York Review Blog and Yale Press Blog.

Invited submission to journal India in Transition on Transforming India into a knowledge power.

Five Opinion Editorial pieces in the Hindustan Times published in New Delhi (newspaper with the largest circulation in India), three pieces published in Huffington Post, one in the Washington Post weekend Outlook section and one in CNN. All pieces are themed on science and math education and research.

Monthly column on astronomy at the popular level in the newspaper 'Asian Age' (2005 - 2008).

Rees, Martin & Natarajan, Priyamvada (2003)
The Dark Universe - a commissioned popular article for DISCOVER magazine (December 2003 issue).

Natarajan, Priyamvada (1998)
The Universe through Gravity's Lens- a popular level review article on Gravitational Lensing in The Icon Critical Dictionary of the New Cosmology, ed. Peter Coles, Icon Books Ltd., U.K.

Natarajan, Priyamvada & Lahav, Ofer (1996)
Synopsis of the Cosmology Session at the National Astronomy Meeting, Liverpool, U.K. : Testing cosmological models, *The Observatory*, Vol. 116, No. 1135, 335.

Creative writing - poetry and fiction - first collection of poems titled '784 Main Street Collection' published by WishWomen (Vol. 1, Issue 6) a women's poetry review magazine in August 1996.

SELECTED INVITED COLLOQUIA & CONFERENCE/WORKSHOP TALKS: 2014 - 2024

2024: Invited colloquium at the Laboratory for Nuclear Science, MIT; Invited colloquium at the Black Hole Initiative; Invited colloquium at the Center for Computational Astrophysics & Flatiron Institute; Invited Speaker at Kinsale Conference of Massive Black Holes in the First Billion Years. Invited to serve on the Scientific Advisory Board of IUCAA, Pune, India and invited speaker at the World Science Festival and Invited speaker at the KITP Conference on Cosmic Dawn Revealed by JWST: The Physics of the First Stars, Galaxies, and Black Holes.

2023: Invited talk at Higgs Center Conference "New Directions in Theoretical Physics 4"; Invited speaker at MARS 2023; Invited to speak at Illuminating Dark Matter Workshop hosted by the Simons Foundation, Germany; Invited to speak at JLF Soneva Fushi, Maldives; Invited colloquium at the University of Miami; Conference Co-Organizer, Belize Conference on Intermediate Mass Black Holes; Organizer, Yale Inference Workshop.

2022: Invited Colloquia at the Department of Physics, Harvard University; Department of Astronomy, California Institute of Technology; and the Department of Astronomy & Physics, University of Texas, Austin. Invited speaker at the STSci Clusters conference; the annual BHI Conference and the ngEHT Conference in Granada, Spain. Invited speaker and session chair at the COSPAR Meeting in Athens, Greece. Organizer, joint Yale-BHI workshop, Black holes Across Space & Time.

2021: Organizer, bi-annual joint Yale-BHI workshop, BLack holes Across Space & Time. Invited speaker in the virtual Golden Webinars in Astrophysics Series; invited Plenary speaker at the Sixteenth Marcel Grossmann meeting on General Relativity; invited plenary talk 237th Annual American Astronomical Society meeting; Invited Distinguished Faculty colloquium, Chinese University of Hong Kong; Invited speaker at the MIT Unfolding Intelligence Conference; Invited speaker at the Aspen Winter conference Rainbow of Dark Sectors; Invited Panelist and Moderator at the Next-Generation Event Horizon Telescope (ngEHT) conference; Distinguished Visitor Colloquium, Department of Physics, IIT-Madras, India; Invited Colloquium, Department of Astronomy, Leiden, The Netherlands; Invited Speaker IAU Meeting on TDEs; Invited Speaker Golden Webinar Series, Chile; Invited Speaker, Annual Mexican Physical Society meeting.

2020: Invited colloquia at: Princeton Plasma Physics Laboratory at Princeton; Institute for Theory & Computation at Harvard University; and the Kavli Institute for Particle Astrophysics at Stanford University; invited topical technical seminars at the Institute for Advanced Study (Princeton) and at the Department of Physics & Astronomy at University of Texas at Austin; Invited lecture series on Dark Matter at the Yale-China Center; Invited Colloquium at the Ogden Center for Computational Astrophysics, University of Durham, U.K.

2019: Invited Keynote talk at the USRA Space Astrophysics Landscape for the 2020s & Beyond: The Future of Space Astrophysics, Potomac, Maryland; MIT-India Conference, MIT, Cambridge; The Hubble Constant Controversy: Status, Implications and Solutions, Heidelberg, Germany; Colloquia at UBC, Vancouver & University of Victoria, Canada; Beyond Stephen Hawking's Legacy, Jerusalem, Israel; Invited review at New Directions in Theoretical Physics 3, Edinburgh, U.K.; Invited talk at the Tal Alexander Workshop, Jerusalem, Israel; Invited talk at annual Black Hole Initiative Conference, Harvard University, Cambridge; Invited talk at 20 years of Chandra conference; Astrophysics Colloquium at M.I.T.; Invited Talk at CoSyne: Cosmological Synergies in the next decade conference, Paris, France; Invited Colloquium at St. Mary's University, Canada; Invited Colloquium at the Institute for Astronomy, University of Hawaii; Invited Spring Colloquium DIPC, Spain.

2018: Invited talks at MIT Alumna Conference; Department of Physics, San Angelo, TX; Institute of Astronomy Colloquium, Cambridge, UK; NYU Colloquium; Simons Center Flatiron Institute Colloquium and Simons Center Public Talk and Colloquium at CITA, Toronto, Canada.

2017: Invited talks at the Black Hole Initiative Conference, Harvard, MA; Elusive AGN conference, George Mason University, VA; Yale Alumni Reunions, New Haven, CT; Radcliffe Institute for Advanced Study, Cambridge, MA; KITP Program on the galaxy-halo connection, Santa Barbara, CA; Cosmic Dawn: Spectral Diagnostics with JWST, Baltimore, MD; Titans of the Universe Workshop at Prato, Italy; Invited talk at the Harvard Black Hole Initiative Center Conference, Cambridge, MA.

2016: Invited colloquium at Smith College, Northampton; Invited talk at the Annual American Astronomical Society meeting, Florida on Detecting the first black holes with JWST; Invited talk at the Inauguration of the Harvard Black Hole Initiative Center; Invited talk at First Stars V Conference in Heidelberg, Germany; Invited talk at the IAU Symposium 324 on New Directions in Black Hole Physics, Slovenia.

2015: Invited colloquia at Institute for Theory & Computation, Harvard University: Invited speaker at conference *Unveiling the Galaxy-Black Hole Connection* in Patagonia; at the Frontier Fields Workshop in Sesto Pusteria; South by High-Redshift Conference in Austin, Texas. Invited talk at Science with the X-ray Surveyor workshop in Washington D.C.; Invited speaker at AAAS session on *Building Galaxies: Some Assembly Required*.

2014: Invited colloquia at Dartmouth and the University of Arizona; Invited lectures at the Cosmology Winter School in Durban, South Africa (January); Invited Review talk at the Science with the Hubble Space Telescope: Looking to the Future Conference, Rome (March); Invited talk at the Hyper-Accretion workshop held at Kavli IPMU in Tokyo, Japan (March); Invited review talk on the first black holes at the Higgs Center Conference on The Physics of first star and galaxy formation (May); Invited talk at the HEAD meeting in Chicago (August); Invited talk at the annual meeting of the Swiss National Science Foundation in Bern, Switzerland (October) and at the Tallberg Forum at CERN, Geneva, Switzerland (October).

RECENT POST DOC, STUDENT ADVISING & MENTORING

Current & Recent Postdocs: Colin Burke (NSF Fellow); Antonio Porras (Heising-Simons Fellow); Michael Tremmel (current faculty at University of Cork, Ireland); mentoring of recent post-docs: Fabio Pacucci currently at Harvard; YCAA Prize Fellows Nico Cappelluti (faculty at University of Miami); Mentored Benny Trakhtenbrot (current faculty at Weizmann Institute, Israel) and Bhaskar Agarwal.

Current & Recent Research Project Students: Shashank Dattathri, Barry Chiang, Mira Varma, Isaque Dutra, Yarone Tokayer, Urmila Chadayammuri, Yotam Cohen, Darryl Seligman, Lamiya Mowla, Ryan Blackman, Tomomi Sugiyama; Undergraduates: Evan Linck, Jason Parisi, Alex Thomas, Luis Fernando Machado, Michelle Lapadula.

Recent Undergraduate Senior Thesis Supervision: Naomi Schwarzburt, Anavi Uppal, Zack Andalman, Evan Linck and Jason Parisi.

Recent Mentoring Activities as DUS: Scheduled regular mentoring meetings with all undergraduate majors and prospective majors; help with summer research placements for all URM students and international students.

Yale PhD Students: Isaque Dutra (current); Angelo Ricarte (2019); Pedro Capelo (2012); Anson D'Aloisio & Andrew Davis (2011); International PhD students (co-advised): Ardis Eliasdottir (2009) at the University of Copenhagen; Marceau Limousin (2007) at the University of Toulouse.

Yale Dissertation Committees: Kimmy Cushman (Physics); Aritra Ghosh (Astronomy); Luna Zagorac (Physics); Dhruva Datta Chowdhary (Astronomy); Kaustav Mitra (Astronomy); Han Aung (Physics); Lamiya Mowla (Astronomy); Shany Danieli (Physics); Uddipan Banik (Astronomy); Urmila Chadayammuri (Astronomy); Tonima Ananna (Physics); Meredith Powell (Physics); Fangzhou Jiang (Astronomy); Lucy Tvrznika (Physics); Meredith Powell (Physics); Erica Nelson (Astronomy); Tomomi Sugiyama (Physics); Camille Avestruz (Physics); Louis Kastens (Physics).

Recent External Dissertation Evaluation Committees: Ashish Meena (IISER, Mohali, India), Soniya Sharma (ANU, Australia), David Fiacconi (University of Zurich, Switzerland), Edwidge Pezzulli (INFN, La Sapienza, Rome, Italy).

Mentoring women in Astronomy: Aside from informal mentoring of several of the women graduate students and several post-doctoral associates currently in the department, I also actively mentor Dr. Erica Nelson (faculty University of Colorado, Boulder); Dr. Mathilde Jauzac (UKRI prize fellow at Durham University); Dr. Laura Blecha (faculty at the University of Florida); Dr. Ferah Munshi (George Mason University); Dr. Julie Comerford (faculty at the University of Colorado at Boulder); serve as official mentor for Chiara Mingarelli (Yale).

Undergraduate Project Students: Zack Andalmann (current, 2023 graduate in Physics); Evan Linck (senior in Physics), Ben Horowitz (Senior, Yale College, currently graduate student at UC Berkeley) worked on Flexion; Ashvin Srivatsa (Senior, Yale College) worked on merger driven galaxy formation, Raghavendra Srinivas (Junior, NUS, visiting student at Yale) working on early black holes; Naomi Lisan (Yale Graduate, WFF research project); Shannon Hill (Divinity School Graduate, WFF research project); Recent Undergraduate advisees: Aobo Guo and Akhil Sud.

Previous research group members (Post-doctoral fellows): Fabio Pacucci (Clay Fellow at Harvard); Michael Tremmel (NSF Fellow); Andrew Davis (The Priory School); David Goldberg (Octopole moments of the shear), Associate Professor at Drexel University, PA; Nick Morgan (Lens redshift test), teaching high-school science at the Staples School, Westport, CT; Ken Rines (Galaxy orbits in clusters and cluster mass functions), Associate Professor at Washington State University.

Previous research group members (Graduate Project Students): Amir Aazami (Substructure and the cusp and fold relations); Anne Abramson (Dwarf galaxies); Latchezar Benatov (Galaxy orbits in clusters); Pedro Capelo (Limitations of the lens-redshift test); Carie Cardamone (Differential Magnification of AGN); Juan Cortes (Consequences of overlapping halos); Camille Avestruz (AGN Feedback); Andrew Davis (Mass reconstruction of clusters); Andres Escala (Combining Lensing, X-ray and S-Z data); James Gilmore (Cluster strong lensing and dark energy); Kwang-Ho Park (Orbital structure of clusters); Ryan Quadri (Lensing by misaligned halos); Katherine Whitaker (Early-type galaxies in Abell 2218).

Previous members (Undergraduate Project Students): Badr Albanna (Redshift distribution of gamma-ray bursts); Peter Aronoff (Properties of the ICM); Taryn Flock (Flexion in clusters); Emily Neubauer (HI content of Virgo spirals); Sue Lin (Cascading Numerical Illiteracy in America); Liyun Jin (Ancient Cosmogonies); Glen Meyerowitz.

SELECTED COMMITTEE WORK AT YALE

2023: Member, Search Committee for Dean of the Humanities.

2022 - present: Member, Information Technology Services Advisory Committee.

2022: Member, Yale Data Science Advisory Committee.

2022 - 2023: Member, Kline Tower Transition Committee.

2021 - 2022: Member, University Tenure Committee for Biological Sciences.

2021 - 2022: Member, Faculty Resources Committee of the FAS Senate.

2017 - 2019; 2011 - 2013: Director of Graduate Studies (Admissions), Department of Astronomy.

2017 - present: Tenure Committee, Department of Physics.

2015 - present: Yale Astronomy Summer Student Research Program Faculty Advisory Board.

2014 - 2017; 2019: Director of Undergraduate Studies, Department of Astronomy.

2014 – 2017: Chair, Yale College Science Council.

2013 - present: Member, Steering Committee of the Women’s Faculty Forum.

2013: Member, Presidential Search Committee and the Presidential Inaugural Committee.

2012 - 2013: Member, President’s Minority Advisory Council (MAC) and Provost’s Committee on Diversity.

2012 – 2013: Member, Graduate Program review committee, Departments of Astronomy & Physics.

2012 - 2019: Astronomy Department Colloquium Organizer (2003-2005), Co-Organizer (2005-2008, 2012-2015); Co-organizer of the weekly Astronomy & Astrophysics Department colloquium (2017-2019).

2011 - 2014: Chair, Women’s Faculty Forum.

2011 – 2013: Member, Yale WFF Public Voices and Thought Leadership Project.

2010 – 2020: Member, Publications Committee, Yale University Press.

2009 – 2014: Member, Yale College Science Council; Henry Fellowship selection committee.

2008 - 2010: Co-Chair, WFF Working Group on Sexual Misconduct at Yale.

2007 – present: Member, Terry Lectureship Committee.

2007 – 2008: Member, Yale College Executive Committee.

2003 – present: Member, South Asia Studies Council, The MacMillan Center; Member, Advisory Board, Yale Scientific Magazine.

2003 – 2006: Member of Astrophysics faculty search committee - the Yale Physics Department.

SCIENCE & ART COLLABORATIONS

Collaboration with Yale School of Architecture faculty Joyce Hsiang & Bimal Mendis on installation titled *The World Turned Inside Out* that was on display at the 59th Venice Biennale, 2021.

Invited conversant with Anselm Kiefer on workshop titled *Superstrings, Runes, Norms, Gordian Knot* at the White Cube Gallery, London, U.K. in January 2020.

Collaboration with the Turner Prize winning sculptor Sir Antony Gormley to produce an AR-VR experience titled LUNATICK a journey that provides the haptic experience of space. Developed with Acute Art U.K. launched in April 2019 and invited to show at the 58th Venice Biennale, 2019 at the Phi Immersive Theater, Venice, Italy.

Invited essay for catalog of the Antony Gormley Retrospective held at the Royal Academy, London September - December 2019.

Collaboration with artist Alyson Shotz, conversation about infinity which led to the piece titled Triple Infinity that was part of the exhibition ART AND SPACE exhibited at the Guggenheim Museum, Bilbao, Spain in 2017.

INVITED PUBLIC TALKS, PRESS RELEASES, MEDIA & PANELS 2014-2024

2023-24: Invited speaker at the Let the Light In Festival; Invited speaker at Jaipur Literary Festival at Soneva Fushi, Maldives & Houston; invited panelist at the Indian American Arts Council Festival; panelist at the BAAS panel on Black Holes at the Oppenheimer event; filmed by BBC; NASA Chandra press release on discovery of UHZ1 - the first direct collapse black hole candidate; covered around the world including New York Times, BBC, CNN, AP, The Guardian, Time, Discovery, Wall Street Journal, Bloomberg and more than 40 newspapers around the world. Press release by Yale OPA on the interpretation of UHZ1; Public talk at the Liberty Science Center. Invited to speak at the Hay Festival, Wales.

2022 -23: Invited public Schrodinger Lecture, Pauli Center for Physics, Zurich; Research work on Dark Matter map from JWST data mentioned in the New York Times, CNN, NBC, BBC, Vox and multiple international outlets; Invited to Sandbox Films Retreat in New York; Invited Yale Alumni Association talk on The Sky is for Everyone; Invited talk at Yale reunions on JWST and the early Universe; Invited to Amazon MARS festival at Ojai; Invited talk at the MIT Annual CSAIL retreat; filmed for Yale's promotional video on basic science research; Interviewed by Radiolab for episode on black holes; Invited talk at the Ramanujan bust dedication ceremony at MIT; Invited public talk at Yale CWASS; Invited public talk at Ashoka University, Delhi.

2021-22: Yale OPA Press Release titled *Black holes and Dark Matter - are they one and the same?*; Research work on black holes mentioned several times in the New York Times on December 14, 2021; December 20, 2021; December 25, 2021 and January ; Featured in the BBC-NOVA series Our Universe; Featured guest on NPR's National broadcast news show 1A on December 20, 2021 and on NPR's Morning Edition on December 20, 2021; Interviewed on the podcast Mindscape; Featured in articles on dual anonymous proposal review in *Nature* and *Physics Today*; Invited Public Talk at the Perimeter Institute, Waterloo, Canada; interviewed for the Vox podcast Unexplained; Invited talk at Yale Club of NYC; Interviewed and work featured in Peter Galison's documentary titled *Black Holes: The Edge of What We Know* & and short film titled *Shattered Stars* on the Chandrasekhar-Eddington controversy; Interviewed by CBC Ideas Program; Invited speaker for conversation with Michael Lemonick at the Jaipur Literary Festival; Invited Speaker at MIT CAST's Unfolding Intelligence conference; Invited moderator at the Jaipur Literary Festival and Interviewed for James Ryerson's New York Times Line Edit podcast; Invited speaker at the Indian Science Festival; Invited colloquium at the Templeton Foundation Big Ideas Series.

2020-2021: Yale OPA press release titled *Holding up a mirror to a dark matter discrepancy & NASA ESA Press-release on Science paper covered widely in Nature magazine and the popular press worldwide including features in Scientific American, Discover, National Geographic, Gizmodo, ScienceNews and many international newspapers; Interviewed for the BBC documentary on the 30th Anniversary of the Hubble Space Telescope; Interviewed on an NPR podcast Shortwave on Black Holes; talk featured on CBC Ideas broadcast in May 2020; Yale OPA press release titled Under pressure, black holes feast on research group's work on Jellyfish Galaxies; work on IMBHs covered in Quanta Magazine and Sky & Telescope; Invited on the following podcasts: Science Rules! With Bill Nye the Science Guy; World Science Festival 2020: Conversation with Brian Greene; Invited speaker on BYU radio; Interviewed on NPR Science Friday and All Things Considered, NPR Short Wave. Invited Speaker at Jaipur Literary Festival; The Secret Science Club; Westport Astronomical Society.*

2019-2020: Interviewed on Star Talk; profiled in Wonders of the Universe Series; invited talks and panels at the Jaipur Literature Festival in Jaipur, Houston and New York; Invited talk at the Center for Contemporary Culture (CCCB) in Barcelona, Spain; Invited talk at the Jerusalem Conference on the Future of Knowledge Creation in the Sciences; Invited plenary talk at the MIT-India Conference; Invited talk at the New York Map Society; Keynote at the Council of World Affairs conference; Research work featured twice in the New York Times, profiled in The Atlantic, El Pais, Mujer Hoy, Gizmodo, New Scientist; Invited to speak on NPR Science Friday and WHSU; published an Op-Ed in the New York Times and essay in The New York Review of Books; Essay published in the Royal Academy of Art Antony Gormley Retrospective Catalogue; Two Yale OPA press releases on scientific results titled *Growing old together: a sharper look at black holes and their host galaxies* & *A Yale Astrophysicist's prediction comes to pass - 20 years later* (one in the Top 10 viewed stories of the year); YaleNews article on inter-disciplinary project *Lunatick*.

2018-2019: Interviewed and profiled by Quartz Magazine for their Visionaries Series; profile & interview published in Quanta Magazine; NBC Mach; and The Atlantic; on Inaugural Jury of the JCB Prize for Literature; Invited speaker at Google Sci-Foo.

2017-2018: Yale OPA press release titled *Yale-led team puts dark matter on the map*; Frequent expert commentator for BBC, NBC, CNN, Quartz, The Atlantic, Nautilus, WIRED, Quanta, and New Scientist on astronomy and astrophysics; Profiled in PBS NOVA documentaries - Black Hole Apocalypse & Dark Matter; Invited Wali Lecture at Syracuse University, Syracuse, NY; Interview and Profile on NPR's Where We Live in the series Making Her Way.

2016-2017: Invited talk at the American Museum of Natural History Frontiers of Science Series, New York; Invited talk at the World Science Festival, Brisbane, Australia; Invited Master class at the World Science Festival, New York on Black Holes; Invited New Scientist Expert Lecture Series on Dark Matter, Boston; Invited Book & Research Talk at the Aspen Ideas Festival; Miami Book Festival; Texas Book Festival; Long Now Foundation; Decatur Book Festival; Wisconsin Book Festival; Times of India Literary Festival; Google; Seattle Town Hall; Skeptics Society; Featured Guest on Wisconsin Public Radio; Philosophy Talk Radio (Stanford); and several nationally syndicated Radio Shows on Science and Science News; Invited Yale representative at NASA 2016 STEM SUMMIT, Washington D.C.; Invited guest on NPR Science Friday two times to speak on Black Holes and Dark Matter; Invited guest on NOVA PRI Frontier of Science Program; Featured speaker in PBS Planetarium Show titled the *Stories of Stars*; Featured speaker in documentaries filmed by NOVA and by Peter Galison (Harvard) on Black Holes.

2015-2016: Organizer of the public White House Astronomy Night satellite event at Yale in October 2015; Invited talk at INK2015, The Indian Knowledge Festival, Mumbai, India; Invited Panelist at the World Science Festival in 2 events: *Dark Energy: Measuring a Mystery and To Infinity and Beyond* & *The Accelerating Universe*; Invited speaker at MIT Catalyst Collective pre-show talks at the Central Square Theater; Invited speaker on NPR's On Point with Tom Ashbrook and Here and Now with John Dankowsky; Invited speaker at Cambridge Science Festival on panel *Celebrating Einstein*; Invited speaker at the Story Collider May Cambridge event; Invited CNS Lecture at University of Massachusetts at Amherst titled *Gender Matters* on Women in Science; Invited speaker at the Indiaspora Forum, Airlie Center, Virginia; Invited Lecturer at the Warrior-Scholar National Project Summer Program.

2014-2015: Invited talk at Secret Science Club, New York; Invited talk at the MIT Alumni Reunion; Panelist at Kavli Frontiers of Science Roundtable on Dark Matter & Dark Energy; Yale OPA Press release titled *How do you feed a hungry quasar?* with a super-boost; Invited member, Helix Center for Inter-disciplinary Enquiry, panel on Limits of Knowledge, New York; Invited talk at the Center for

Inquiry Conference *The Cutting Edge: Science in the 21st Century and Beyond*, Cleveland, Ohio;
Invited panelist on *Future of Liberal Arts & Science Education* Conference, Bangalore, India.

2013-2014: Invited member, Helix Center for Inter-disciplinary Enquiry, panel on Women in Science, New York; Kavli Frontiers of Science Roundtable on Black Holes; Invited Public talk to donors at Kavli Institute for Theoretical Physics, Santa Barbara.

2012-2013: Invited speaker at inaugural Yale TEDx; Invited speaker on several programs on NPR, KZUM and Virgin Radio (UK); Featured in Japanese TV NHK documentary on The Enigma of Black Holes; Moderated Young Global Fellows (World Economic Forum, Davos, Switzerland) panel on *How to nurture women leaders*; featured in the following Yale Office of Public Affairs articles: On navigating career pressure points for women faculty, Progress of women faculty in academia, How to foster more women leaders; Interviewed on the MacMillan Report discussing Gender Parity in Academia.