Astro2020: Panel on Particle Astrophysics and Gravitation

Committee

John F. Beacom

Chair

JOHN F. BEACOM is the Henry L. Cox Professor of Physics and Astronomy as well as an Arts and Sciences Distinguished Professor at the Ohio State University. He is also the Director of the Center for Cosmology and AstroParticle Physics. His research interests focus on the intersections of the fields of astrophysics, particle physics, and nuclear physics, especially neutrinos. Prior to joining the Ohio State University, Beacom was a David N. Schramm Fellow of the Theoretical Astrophysics Group at Fermilab, and a Sherman Fairchild Postdoctoral Scholar at Caltech. He is the recipient of numerous recognitions, including being a Fermilab Distinguished Scholar, a Divisional Associate Editor of Physical Review Letters, a Fellow of the American Physical Society, and the winner of two major teaching awards at the Ohio State University. Beacom received his Ph.D. in physics from the University of Wisconsin. He has not previously served on an Academies' committee.

Laura Cadonati

Co-Chair

LAURA CADONATI, co-chair, is Professor of Physics at the Georgia Institute of Technology. Formerly she was an associate professor at the University of Massachusetts Amherst. Areas of research include gravitational waves and particle astrophysics, with a focus on the detection, characterization, and astrophysical interpretation of short-duration gravitational wave signals that are produced by cataclysmic astrophysical events such as the collisions of black holes and neutron stars, or core collapse supernovae. She is a member and past deputy spokesperson of the Laser Interferometer Gravitational-Wave Observatory (LIGO) Scientific Collaboration, and a past member of the Borexino Solar Neutrino Collaboration. She is a fellow of the American Physical Society (APS), has chaired the APS Division of Gravity, and is a recipient of the National Science Foundation CAREER Award and the Georgia Institute of Technology outstanding faculty research author award. She holds a Ph.D. in physics from Princeton University. She has not previously served on an Academies' committee.

David Besson

Member

DAVID Z. BESSON is a professor of physics at the University of Kansas. Key areas of research have included particle astrophysics using radio detection methods and astrophysical applications of silicon photomultipliers. In particular, he is currently involved in several projects to detect very-high energy cosmic rays (primarily protons or neutrinos) from either their radio-wave emissions or radar reflections. He is also involved in studies of anomalous charmed baryon correlations with the Belle and Belle-II experiments. He received a Ph.D. in physics from Rutgers. He has not previously served on an Academies' committee.

Gabriela Gonzalez

Member

GABRIELA GONZÁLEZ (NAS) is professor of physics and Astronomy at Louisiana State University (LSU). She is also the former spokesperson of the Laser Interferometer Gravitational-Wave Observatory (LIGO) Collaboration in the department of physics and astronomy. She is a leader of the LIGO collaboration to detect gravitational waves that successfully observed a signal on September 15, 2015, generated by the collision of a binary system of black holes. Prior to joining LSU, González was an assistant professor at the Pennsylvania State University. She has received numerous honors and awards including, most recently, the Southeastern Universities Research Association (SURA) Distinguished Scientist Award and the Dickinson College John Glover Award Medal. González received her Ph.D. in physics from Syracuse University. González has served on the Academies' Board on Higher Education and the Workforce and the Astro2010 Decadal Survey's Panel on Particle Astrophysics and Gravitation.

Jordan A. Goodman

Member

JORDAN A. GOODMAN is a Distinguished University Professor of Physics at the University of Maryland. His research interests include particle astrophysics, which includes the study of cosmic radiation to better understand he properties in space that produce those particles, blending both the elements of high energy physics and astrophysics. Goodman has served in various capacities at the University of Maryland, including former chair of the Physics Department. He is the principal investigator and has been the U.S. Spokesperson of the High-Altitude Water Cherenkov (HAWC) Gamma Ray Observatory. Goodman is the recipient of numerous awards, including the 2017 Yodh Prize for Astroparticle Physics Commission of IUPAP, the 2016 Breakthrough Prize in fundamental physics, and the University of Maryland President's Medal in 2009. He received his Ph.D. in physics from the University of Maryland. He has not previously served on an Academies' committee.

Elizabeth Hays

Member

ELIZABETH A. HAYS is a research astrophysicist and the chief of the Astroparticle Physics Laboratory at NASA Goddard Space Flight Center. She serves as the project scientist for the Fermi Gamma-ray Space Telescope. Her research focuses on high-energy studies of astrophysical sites of particle acceleration and development of instrumentation for space-based gamma-ray observatories. She has received the Robert H. Goddard Exceptional Scientific Achievement award and is a fellow of the American Physical Society. She received a Ph.D. in physics from the University of Maryland, College Park. She has previously served on an Academies' committee.

N. J. Kasdin

Member

N. JEREMY KASDIN is the assistant dean for engineering programs at the University of San Francisco. He is also the Eugene Higgins Professor of Mechanical and Aerospace Engineering, emeritus, at Princeton University. Previously, he was a member of the Princeton faculty for 20 years and held the post of vice dean of the School of Engineering and Applied Science. Prior to that, he was the chief systems engineer for NASA's Gravity Probe B spacecraft. While at Princeton he studied techniques for high-contrast imaging from ground and space using coronagraphs and starshades. He was the principal investigator for the Coronagraphic High Angular Resolution Imaging Spectrograph (CHARIS) instrument on the Subaru Telescope on Maunakea, HI. He is the adjutant scientist for the coronagraph instrument on NASA's Wide Field Infrared Survey Telescope. He earned his Ph.D. in aeronautics and astronautics from Stanford University. He has previously served on National Academies committee, including the Astro2010 Panel on Particle Astrophysics and Gravitation.

David Kieda

Member

DAVID B. KIEDA is a professor at the University of Utah (UU) in the Department of Physics and Astronomy. He also serves as the dean of the UU Graduate School. Kieda is the head of the UU experimental gamma-ray astronomy research group. He has led the development of new technologies for observational high-energy astrophysics, including work on the Fly's Eye/High-Resolution Fly's Eye, the Very Energetic Radiation Imaging Telescope Array System (VERITAS), HAWC, and the Cherenkov Telescope Array (CTA) observatories. Kieda also works on the development of techniques for visible band imaging of nearby hot stars with an angular resolution better than 100 micro-arc seconds. He received the Utah Governor's Medal of Science and Technology and is a fellow of the American Physical Society. He earned his Ph.D. in physics from the University of Pennsylvania. He has not previously served on an Academies' committee.

Andrea Lommen

Member

ANDREA N. LOMMEN is a professor and the chair of the Physics and Astronomy Department at Haverford College. Previously she held the same positions at Franklin and Marshall College. Dr. Lommen has founded efforts in gravitational wave detection using pulsars through both the North American Nanohertz Observatory of Gravitational Waves and the International Pulsar Timing Array. She is currently leading efforts to demonstrate pulsar timing capabilities in the x-ray regime as part of NASA's Neutron Star Interior Composition Explorer. She has received a National Science Foundation CAREER award. She received a Ph.D. in astrophysics from the University of California, Berkeley. She has not previously served on an Academies' committee.

Brian Metzger

Member

BRIAN D. METZGER is a professor at Columbia University in the Department of Physics. His research covers a wide range of topics in theoretical high energy astrophysics, mostly related to compact objects, nucleosynthesis (astrophysical origin of the elements), and the electromagnetic counterparts of gravitational wave sources. Dr. Metzger has received a New Horizons Breakthrough Prize in Physics and a Bruno Rossi Prize of the American Astronomical Society. He earned his Ph.D. in physics from the University of California, Berkeley. He has not previously served on an Academies' committee.

James Yeck

Member

JAMES H. YECK is a researcher with the University of Wisconsin, Madison. He serves as the interim project director for the Cosmic Microwave Background-Stage 4 (CMB-S4) project. Previously he was the director general of the European Spallation Source (ESS) in Lund, Sweden, and the project director of the IceCube South Pole Neutrino Observatory. He has more than 30 years of project director and project manager experience leading projects in both federal and contractor roles. He currently chairs and serves as a member of numerous advisory committees for projects and facilities sponsored by the Department of Energy and National Science Foundation, including LIGO and the Large Synoptic Survey Telescope. He holds an M.S. in mechanical and nuclear engineering from Northwestern University. He has not previously served on an Academies' committee.

Nicolas Yunes

Member

NICOLAS YUNES is a professor of physics at the University of Illinois at Urbana-Champaign. Previously he was an associate professor of physics and one of the founding directors of the eXtreme Gravity Institute at Montana State University. Key areas of research have included gravitational wave theory, modeling and data analysis with ground- and space-based detectors, black hole and neutron star theory, and tests of general relativity with gravitational waves, binary pulsars, and solar system observations. He has received the Young Scientist Prize of the International Union of Pure and Applied Physics and the International Society on General Relativity and Gravitation, the NASA Einstein Fellowship, and the Juergen Ehlers Thesis Prize from the International Society on General Relativity and Gravitation. He is an editor of Classical and Quantum Gravity. He received a Ph.D. in physics from the Pennsylvania State University. He has not previously served on an Academies' committee.