

Brief Biography
Anthony Mezzacappa



Dr. Mezzacappa is the Newton W. and Wilma C. Thomas Chair in Theoretical and Computational Astrophysics and the College of Arts and Sciences Excellence Professor, in the Department of Physics and Astronomy at the University of Tennessee, Knoxville. He served as the Director of the Joint Institute for Computational Sciences, joint between the University of Tennessee and its six UT-Battelle partner universities and the Oak Ridge National Laboratory, from 2012 to 2019. Prior to joining the University of Tennessee, Dr. Mezzacappa was a Corporate Fellow at the Oak Ridge National Laboratory, Group Leader for Theoretical Physics in its Physics Division, Group Leader for Computational Astrophysics in its Computer Science and Mathematics Division, and had been on staff at ORNL since 1996, where he created one of the leading core collapse supernova theory programs in the world, and the largest. Dr. Mezzacappa held postdoctoral appointments at the University of Pennsylvania and the University of North Carolina at Chapel Hill before joining ORNL. He completed his B.S. degree in physics at M.I.T. in 1980, and his Ph.D. in physics at the Center for Relativity at the University of Texas at Austin in 1988, one of the leading centers for the study of relativity and its astrophysical applications in the world. He has worked in the areas of astrophysics and cosmology and specializes in the theory of core collapse supernovae and in the development of computational methods and simulation frameworks for simulations of such supernovae on leadership-class supercomputing platforms.

Dr. Mezzacappa received a DOE Young Scientist Award from Secretary of Energy Richardson and a Presidential Early Career Award for Scientists and Engineers from President Clinton in 1999 for his contributions to core collapse supernova theory. He was the Principal Investigator of the first large-scale, multi-investigator, multi-institutional computational astrophysics effort in the U.S. to focus on core collapse supernovae: the DOE SciDAC Terascale Supernova Initiative. Dr. Mezzacappa was elected a Fellow of the American Physical Society in 2004 and a UT-Battelle Corporate Fellow in 2005 in recognition of his supernova research and his role, much more broadly, in the development of computational science in the U.S. Most recently, he was elected a Fellow of the American Association for the Advancement of Science. He is a member of the 2023 Class of Fellows.

Dr. Mezzacappa was a member of the DOE Advanced Scientific Computing Advisory Committee's Exascale Subcommittee and coauthor of several reports motivating tera-, peta-, and exa-scale computing, including *Forefront Questions in Nuclear Science and the Role of High-Performance Computing*; *Scientific Challenges for Understanding the Quantum Universe and the Role of Computing at Extreme Scale*; *Modeling and Simulation at the Exascale for Energy and the Environment*; and *A Science-Based Case for Large-Scale Simulation*. He was also a member of the Facilities, Funding, and Programs Independent Study Group for the Astro2010 Decadal Survey and a Co-Convener of the Computing Frontier, Astrophysics and Cosmology for the APS Divisions of Astrophysics and Particle Physics Snowmass 2013 High Energy Physics Decadal Planning. Most recently, he served as Deputy Theory Chair of the Core Collapse Supernova Subgroup of the Gravitational Wave International Committee's (GWIC) Third Generation (3G) Science Case Team, whose responsibility was to develop the report *The Science Case for the Next-Generation of Ground-Based Gravitational-Wave Detectors* motivating investment in next-generation gravitational wave detectors. Dr. Mezzacappa also serves as Chair of the international Supernova Multimessenger Consortium, which he founded to assist the LIGO–Virgo—KAGRA Scientific Collaboration in its efforts to detect gravitational waves from core collapse supernovae. He serves on the Editorial Board of the *International Journal of High-Performance Computing Applications* since 2006, served on the Editorial Board of *Computational Science and Discovery* from 2005 – 2014, and served as Scientific Editor-in-Chief of *Computational Science and Discovery* from 2005 – 2010.

Dr. Mezzacappa has authored or coauthored numerous scientific publications, edited or coedited eight volumes in his field or in the broader field of computational science, and has given numerous presentations internationally,

including named lectureships, conference presentations, colloquia, seminars, summer school lectures, public lectures, and high school lectures.

Dr. Mezzacappa has devoted significant time and effort to education and outreach, both locally and nationally. He received the Teacher of the Year Award from the University of Tennessee Chapter of the Society of Physics Students in Academic Year 2013 – 2014. In 2022, he was awarded one of the highest honors given by the University of Tennessee to a faculty member, the Alexander Prize, which was established by former Senator Lamar Alexander and his wife to honor a faculty member for both distinguished scholarship and distinguished undergraduate teaching. And most recently, in Academic Year 2023 – 2024, Dr. Mezzacappa received the Teacher of the Year Award from the graduate students in the Department for his outstanding graduate-level teaching. He chaired the Department of Physics and Astronomy's Undergraduate Curriculum Committee from 2015 – 2022, out of which came the first major revision of the Department's undergraduate curriculum in more than two decades and the creation of a new degree program, a Bachelor's of Arts degree in Physics, to tailor the Physics degree at the University of Tennessee to accommodate the diversifying student body thanks to Tennessee's national leadership in making a university education accessible to all (through Tennessee Promise and Tennessee Pathways). Dr. Mezzacappa was a Founding member of the Sequoyah Elementary School Foundation, which was established to provision, as a pilot project, Sequoyah Elementary School, one of Knox County's public schools, with laptops for every teacher and student, smart boards in every classroom, schoolwide wireless internet, among other technological improvements. He served on the Board of Trustees for the East Tennessee Discovery Center from 2004 – 2010, whose primary goal was to develop plans for a national-class children's discovery center in downtown Knoxville. Dr. Mezzacappa established the University of Tennessee, Department of Physics and Astronomy, High School Physics Academy, to bring the physics frontier across all physics disciplines to high school classrooms in the Knox County Public School System, especially to AP and IB Physics classes, through onsite lectures by participating faculty in Dr. Mezzacappa's department. His dedication to reaching out to high school students stems from his own experience at the age of sixteen of choosing physics as a career because of the influence of an AP Physics teacher at his high school. Dr. Mezzacappa has been active in communicating science to the general public. He and his work have been featured on the National Geographic Channel and in *Science*, *Physics Today*, and *Scientific American*, to name a few venues, and he has delivered public lectures throughout the U.S.