# Biographical Information

Barry C. Barish

Barry C. Barish is the Director of the Laser Interferometer Gravitational Wave Observatory (LIGO) and a professor of high-energy physics at the California Institute of Technology, where he has taught and conducted research since 1963. In October 2002, Dr. Barish was nominated to the National Science Board, a 24-member board that helps oversee the National Science Foundation (NSF) and advises the President and the Congress on policy issues related to science, engineering, and education.

Dr. Barish earned his Bachelor of Arts in physics in 1957 and a Ph.D. in experimental high-energy physics in 1963 from the University of California, Berkeley. At Caltech, Dr. Barish helped develop a new high-energy physics program that utilized the frontier particle accelerators. Among Dr. Barish's noteworthy experiments were those at Fermilab using high-energy neutrinos to reveal the quark substructure of the nucleon. These experiments were among the first to observe the weak neutral current, a linchpin in the Electro-Weak Unification theory of Glashow, Salam, and Weinberg.

In the 1980s, Barish initiated an ambitious international effort to build a sophisticated underground detector (MACRO) to search for the magnetic monopole and solve other problems in the emerging area of particle astrophysics. The experiments conducted underground in Italy provided some of the key evidence that neutrinos have mass. Dr. Barish is presently involved in an experiment at the Soudan Underground Mine in Minnesota (MINOS) to further study neutrino properties.

Dr. Barish was named the Maxine and Ronald Linde Professor of Physics in 1991. He became the Principal Investigator of the LIGO project in 1994 and was appointed Director of the LIGO Laboratory in 1997. LIGO is an NSF-funded, joint Caltech-MIT collaboration to detect gravitational waves from distant sources such as colliding black holes. The 4-kilometer LIGO interferometers, located in rural Louisiana and Washington State, are designed to detect ripples in space-time far smaller than the size of a proton. LIGO is well into its commissioning and has taken initial data that has already produced some improved limits on gravitational waves from astrophysics sources.

Dr. Barish served as co-chair of the sub panel of the High Energy Physics Advisory Panel (HEPAP) that developed a long-range plan for U.S. high-energy physics. He has served as chair of the Commission of Particles and Fields of the International Union of Pure and Applied Physics (IUPAP) and is currently chair of the U.S. Liaison committee to IUPAP.

In 2002 he received the Klopsteg Award of the American Association of Physics Teachers and was elected to the National Academy of Sciences. Dr. Barish chaired an NRC panel, Neutrino Facilities Assessment Committee, in 2002 that produced the NAS report, “Neutrinos and Beyond.” In 2003, he is serving as a member of the special panel for NASA that is considering the future of the Hubble Space Telescope and the transition to the James Webb Space Telescope.

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