

Curriculum Vitae

Professor Samuel Ting
Thomas D. Cabot Institute Chair

March 2026

*Awarded Nobel Prize in Physics in 1976,
which he shared with Burton Richter, for the discovery of the J/ψ meson nuclear particle.*

Research Interests

Discovery of nuclear anti-matter (the anti-deuteron).

Measuring the size of the electron family (the electron, the muon, and the tau) showing that the electron family has zero size (with a radius smaller than $10e^{-17}$ cm).

Precision study of light rays and massive light rays showing that light rays and massive light rays (vector mesons) can transform into each other at high energies and providing a critical verification of the vector dominance model.

Precision measurement of the radius of the atomic nuclei.

Discovery of a new kind of matter (the J particle) at the Brookhaven National Laboratory. This discovery was known as the “November Revolution” in particle physics. The Nobel Prize was awarded to Ting for this discovery.

Discovery of the gluon (the particle responsible for transmitting the nuclear force).

A systematic study of the properties of gluons which provided critical verification of Quantum Chromo-Dynamics (QCD).

A precision measurement of muon charge asymmetry, demonstrating for the first time the validity of the Standard Electroweak Model (Weinberg, Glashow, and Salam).

Determination of the number of electron families and neutrino species in the Universe and the precision verification of the Electroweak Unification Theory.

Proposed, constructed and leads the Alpha Magnetic Spectrometer (AMS) experiment on the International Space Station involving the participation of a 16-nation collaboration searching for the existence of heavy cosmic antimatter, the origin of dark matter, and the properties of cosmic rays.

Development of the first large superconducting magnet for space application.

AMS results, based on 15 years in space and more than 260 billion cosmic rays, have changed our understanding of the cosmos.

Biographical Sketch

Samuel Ting was born in Ann Arbor, Michigan. Shortly after, his parents, who were both graduate students at the University of Michigan, took him to China. He grew up in Chongking, Nanjing, and Taipei during the war years. He returned to the University of Michigan where he received his B.S.E. degrees (in Physics and in Mathematics) and Ph.D. (in Physics). He is the Thomas D. Cabot Institute Chair at the Massachusetts Institute of Technology. Ting has always proposed and led international collaborations in experimental physics using accelerators in the U.S., Germany and Switzerland and on board the U.S. Space Shuttle Discovery and the International Space Station.

AWARDS & HONORS

2025 // Basic Science Lifetime Award (ICBS) for "his transformative discovery of the J/ψ meson, groundbreaking contributions to space-based research, and visionary leadership in global collaborations in experimental physics."

2023 // Bhabha Award for "his vision and leadership of the Alpha Magnetic Spectrometer experiment on the International Space Station, which has provided data of unprecedented precision on the spectrum & composition of Galactic cosmic rays that challenge conventional models of their origin."

2017 // Award for Compelling Results in Physical Sciences, NASA

2013 // Doctor Honoris Causa, Gustavus Adolphus College, Minnesota

2012 // University Distinguished Professor, University of Hawaii at Manoa

2012 // American Association for the Advancement of Science Fellow

2011 // World Federation of Scientists 2009 Erice Prize for Peace

2005 // Doctor Honoris Causa, Hong Kong University of Science and Technology

2005 // Doctor Honoris Causa, National Central University, Taiwan

2004 // Honorary Fellow, Tata Institute of Fundamental Research, Mumbai, India

2004 // Doctor Honoris Causa, Rheinische Westfälische Technische Hochschule, (RWTH), Aachen, Germany

2003 // Foreign Member, Royal Spanish Academy of Science

2003 // Doctor Honoris Causa, National Chiao Tung University, Taiwan

2003 // Doctor Honoris Causa, Hong Kong Baptist University

2002 // Distinguished Science and Technology Award from the Chinese Institute of Engineers/USA

2002 // Doctor Honoris Causa, National Tsing Hua University (Taiwan)

2001 // NASA Public Service Medal

1996 // Member, Deutsche Academy Naturforscher Leopoldina, Germany

1995 // Foreign Member, Russian Academy of Sciences

1994 // Foreign Member, Chinese Academy of Sciences

1993 // Foreign Member, Hungarian Academy of Sciences

1993 // Doctor Honoris Causa, University of Bucharest, Romania

1992 // Doctor Honoris Causa, University of Science and Technology, China

1992 // Doctor Honoris Causa, Moscow State University, USSR

1990 // Doctor Honoris Causa, Columbia University, New York

1988 // Gold Medal for Science, Brescia, Italy

1988 // Golden Leopard Award for Excellence, Taormina, Italy

1988 // Doctor Honoris Causa, University of Bologna, Italy

1988 // DeGaspari Award in Science from the Government of Italy

1988 // Foreign Member, Soviet Academy of Sciences, USSR

1987 // Doctor Honoris Causa, Chinese University of Hong Kong

1983 // Foreign Member, Pakistan Academy of Sciences

1980 // Member of the Editorial Board, Mathematical Modeling

1978 // Sc.D. (Hon.) University of Michigan

1977 // Golden Plate Award of the American Academy of Achievement

1977 // Eringen Medal, Society of Engineering Sciences, USA

1977 // Thomas Dudley Cabot Professor, MIT

1977 // National Academy of Sciences Member

1976 // Member, Academia Sinica, Taiwan

1976 // Nobel Prize in Physics (co-recipient with Burton Richter) “for their pioneering work in the discovery of a heavy elementary particle of a new kind”

1975 // Ernest Orlando Lawrence Award from the U.S. Government

1975 // American Academy of Arts and Sciences Member

1970 // Associate Editor, Nuclear Physics B

KEY PUBLICATIONS

M. Aguilar, et al., “Towards Understanding the Origin of Cosmic-Ray Positrons”, Phys. Rev. Lett. **122**, 0411102 (2019).

D.P. Barber, et al., “Discovery of Three-Jet Events and a Test of Quantum Chromodynamics at PETRA”, Phys. Rev. Lett. **43**, 830 (1979).

J. J. Aubert, et al., “Experimental Observation of a Heavy Particle J”. Phys. Rev. Lett. **33**, 1404 (1974).

Of the 30 Physical Review Letter publications from the AMS experiment, most have been selected by the American Physical Society as an Editors’ Suggestion, as a Viewpoint in *Physics*, or highlighted for the press.