

李世昌博士 (Shih-Chang Lee, Ph. D.) 簡介



Date of birth: May 25, 1952

Specialties: Particle Physics

Current position(s):

Distinguished Research Fellow of the Institute of Physics, Academia Sinica and Professor of Physics, National Tsing Hua University and National Central University

■ Education and professional experiences:

National Taiwan University, B.S. Physics (1974)

Princeton University, Ph.D. Physics (1980)

Institute for Advance Study, Research Associate (1980)

ITP, SUNY at Stony Brook, Research Associate (1980-1983)

Institute of Physics, Academia Sinica, Associate Research Fellow (1983-1986), Research Fellow (1986-2010), Distinguished Research Fellow (2010-), Deputy Director (1991-1996)

National Science Council Division of Natural Science and Mathematics, Program Director (1990-1993), Advisory Committee Member (1988-1990, 1994-1996, 2003-2005)

IUPAP ICFA member (2006-2008, representing countries other than US, Russia, CERN member states, Japan and China)

International Linear Collider Steering Committee, member (2008)

Asia Committee for Future Accelerators (ACFA), Taiwan Representative (1996-2004)

Project Leader of Taiwan Team in CDF Experiment at the Fermi National Laboratory, Chicago (1993-2000)

Project Leader of Taiwan Team in AMS Experiment for the International Space Station (1995-)

Originated the Taiwan Neutrino Experiment (TEXONO) (1996)

Project Leader of Taiwan Team in ATLAS Experiment at CERN, Geneva (1999-)

Advisory Group of ATLAS Collaboration Board, member (2006-2007)

The Physical Society of the Republic of China, President Elect (2000-2001), President (2002-2003)

Steering Committee of the National Applied Research Laboratory, member (2004-2006)

National Center for Theoretical Sciences Board of Directors, member (2003-2008)

Chief Executive Officer of the Academia Sinica Grid and Scientific Computing Center (2009-)

■ Award(s) and honor(s):

National Science Council Award for Outstanding Research (1986, 1988)

Chung Shan Prize (1987)

Fellow of the Physical Society of R.O.C. (1995)

Chuang Shou Geng Prize (1995)

2010 Enrico Fermi Award, Enrico Fermi Center, Italy

Academician of Academia Sinica, Taiwan (2010)

Fellow, The World Academy of Sciences (TWAS) (2013)

■ **Summary of academic and scholastic contributions:**

Experimental Physics

- Built up the Taiwan team to join the highest energy proton-antiproton collider experiment CDF at Fermi National Lab. in 1993. Led the Taiwan team in making significant and visible contributions to the discovery of the top quark by CDF in 1995. This marks the start of the serious development of experimental high energy physics in Taiwan.
- Originated and proposed the AMS experiment together with Italy, Switzerland, U.S.A. and Russia in 1995. Lead the Taiwan team in designing and building of most of the fast electronics for both the test shuttle flight in 1998 and the coming space flight. AMS is the first precision magnetic particle spectrometer in space. The data analyses done in Taiwan after the first test flight discovered a new type of high energy radiation belt in the magnetosphere and showed that the cosmic ray proton spectrum disagrees with the predictions of the cosmic ray model at high energies. This is the pioneering effort for Taiwan to enter astroparticle physics research in space.
- Originated the neutrino experiment in Taiwan, together with Professor Chung-Yun Chang, in 1996. The experiment measured the electron-neutrino magnetic moment for the first time in Taiwan and obtained the World's best result which constrains the possible secondary structure of the neutrino. This is the first world-class particle physics experiment done in Taiwan.
- Lead the Taiwan team to participate the ATLAS experiment of the Large Hadron Collider (LHC) international collaboration project since 1999. LHC is the World's largest collider at the European Center for Particle Physics (CERN) to probe new physics at a length scale of 10^{-17} centimeter and smaller . Both LHC and ATLAS will start running in the Fall of 2009. Academia Sinica is the major team in providing the optical links for the data acquisition chain of ATLAS. Academia Sinica is also the only Asia Tier 1 Center of the Worldwide LHC Grid (WLCG) which is crucial for processing and analyzing data from all four major LHC experiments including ATLAS.
- Led the Taiwan team in developing the new technologies for large scale optical readout of particle detectors for the first time in collider experiments. This was used by CDF. Optical readout is now adopted by most collider detectors under construction.

Theoretical Physics

- Proposed the application of stochastic quantization to the numerical studies of lattice gauge theories (1983). Stochastic quantization had since become one of the standard numerical methods in solving gauge theories.
- Discovered and classified all spherically symmetric magnetic monopoles and dyons (1984-1985) in gravity theory in five and higher dimensions. This has been extended by other researchers to obtain cosmological and black hole solutions. The role of magnetic monopoles and dyons in the evolution of the Universe is still unclear at this moment.