

Hong-Jian He and Zheng-Ming Sheng won the 2016 Achievement in Asia Award (Robert T. Poe Prize)

Professor Hong-Jian He (Institute of Modern Physics and Department of Engineering Physics, Tsinghua University, Beijing) and Prof. Zheng-Ming Sheng (Department of Physics and Astronomy, Shanghai Jiao-Tong University) are the co-winners of the 2016 Achievement in Asia Award (Robert T. Poe Prize) given by the International Organization of Chinese Physicists and Astronomers (OCPA).

The OCPA AAA (Robert T. Poe Prize) is awarded annually to a Chinese physicist/astronomer or a team working in Asia in recognition of their outstanding achievements in physics and astronomy. The Award carries a total cash prize of US\$2,000 and a certificate citing the awardee's accomplishments in research.

Professor Hong-Jian He received his undergraduate and graduate educations at Tsinghua University, and his Ph.D in physics in 1992. Then, he was offered a postdoctoral fellow by Virginia Polytechnic Institute & State University (USA) in 1993 due to his outstanding Ph.D. thesis work. After that, he was honored as the Alexander-von-Humboldt Fellow at DESY (Germany), and then became a Research Associate at Michigan State University (USA) until 2000. He joined the University of Texas at Austin as a Research Scientist during 2000-2005. Since 2005, he became a Full Professor at Tsinghua University under “100-Talents Plan of 21st Century”. He was awarded “National Science and Technology Prize for Young Scientists” and “National Outstanding Young Investigator Grant Award” in 2006. He was awarded by Chinese Physical Society (CPS) for “Gan-Chang Wang Physics Prize” in 2015. He also received the “Excellent Teaching Award” of Tsinghua University in 2011. He was the Associate Editor of the international journal “Advances of High Energy Physics” during 2007-2014. Since 2013, he has served as the Editor of “Nuclear Physics B”, a leading international journal in particle physics.

Dr. He did innovative research in several frontiers of particle physics and the interface with cosmology and quantum gravity, including the origin of mass and Higgs mechanism, collider physics, neutrino mixing and oscillation, origins of matter and dark matter, inflation, and dark energy. These had significant international impacts in the field. He collaborated with experimentalists, and made new theory predictions for collider experiments, neutrino experiments, dark matter experiments, and cosmological observations. Over the past ten years, Professor He has constantly helped particle physics projects in China and played leadership in promoting international collaborations.

Prof. He has made systematical efforts to provide much needed theoretical support for the HEP experimental programs in China. His works on neutrino physics gave new predictions for θ_{13} which are supported by Daya Bay reactor data in the spring 2012. He collaborated with both ATLAS and CMS colleagues of IHEP/CAS for new physics searches at the LHC. He also collaborated with CDEX experimentalists for the Dark Matter analysis and has served as a member of the CDEX collaboration since 2012. From the fall 2012, he has made joint efforts with IHEP experimental colleagues for planning the future Circular Higgs factory and pp Colliders (CEPC/SPPC). He has served on the CEPC Steering Committee and is the Convener of Theory Working Group for CEPC/SPPC since 2013.

Since his return to China in 2005, Prof. He has done innovative works with his collaborators in several important frontiers of particle physics and the interface with cosmology & quantum gravity. These had significant impacts and include the following in particular: (1). Neutrino Physics: He has been a prominent theory leader in China for studying the neutrino physics, and made important predictions for Daya Bay and other neutrino experiments. These include his works on the μ - τ and CP breaking in neutrino seesaw, baryon asymmetry, and hidden flavor symmetry. He proposed a single extremely attractive conjecture that all Dirac and Majorana CP violations arise from a common origin in neutrino seesaw. Under this, it was discovered

that μ - τ breaking shares the common origin with all CP violations, which leads to striking predictions. He proposed Octahedral Group O_h as a new family symmetry and predicted θ_{13} . He proposed the realistic new concept of “Constrained Maximal CP Violation”, and proved a general theorem to uncover its origin. Using Leptonic Unitarity Triangles, he presented new geometrical formulation of neutrino oscillations with CP violation, and applied this to study high-energy astrophysical neutrinos and the long baseline oscillation experiments. (2). Higgs Gravitational Interaction and Inflation: He gave the first proof that Higgs-gravity interactions respect longitudinal-Goldstone Equivalence Theorem; he proposed new tests of Higgs gravitational interactions at the LHC and future colliders. He derived the first quantitative unitarity bound on Higgs Inflation, and resolved the longstanding controversy in the literature. He further proposed three types of realistic new Higgs inflations. (3). Electroweak Symmetry Breaking (EWSB) and Dark Matter (DM): He proposed a minimal viable extension of the standard model with scale-invariant Higgs mechanism. It generates radiative EWSB and gives a natural resolution to the important “Hierarchy Problem”. He also proposed a new joint-unitarization mechanism for EWSB, which predicted both new Higgs states and new gauge bosons for collider searches. For DM physics, he proposed three types of new DM candidates, and predicted their distinctive signatures via direct/indirect detections and collider production.

The winners of the 2016 AAA (Robert T. Poe Prize) were selected by following panel of distinguished physicists (in alphabetical order):

Professor Che-Ting Chan	Hong Kong University of Science and Technology
Professor Meng Jie	Peking University
Professor Ting-Kuo Lee	Institute of Physics, Academia Sinica, Taiwan
Professor Zheng-Tian Lu	University of Science and Technology, Hefei
Professor Jian-Wei Qiu	Iowa State University and Brookhaven National Laboratory

OCPA's AAA activity is a continuing program and represents a long tradition of OCPA to recognize outstanding achievements of the members of the Chinese physics and astronomy community. Previous AAA winners include:

OU-YANG, Zhong-Can	(1993, Institute of Theoretical Physics, China)
ZHU, Qing-Shi	(1994, University of Science and Technology, China)
I, Lin	(1995, National Central University, Taiwan)
WEI, Ching-Ming	(1996, Academia Sinica, Taiwan)
CHING, Emily Shuk-Chi	(1999, Chinese University of Hong Kong)
WANG, Jian	(1999, University of Hong Kong)
CHAN, Che-Ting	(2000, Hong Kong University of Science & Technology)
HOU, Jian-Guo	(2001, University of Science & Technology, China)
YANG, Xue-Ming	(2001, Academia Sinica, Taiwan)
HOU, Wei-Shu	(2002, National Taiwan University, Taiwan)
WANG, Enge	(2002, Institute of Physics, CAS, China)
ZHANG, Jie	(2004, Institute of Physics, CAS, China)
LI, Baowen	(2005, National University of Singapore)
WANG, Ning	(2006, Hong Kong University of Science & Technology)
LI, Hsiang-nan	(2007, Academia Sinica, Taiwan)
GAO, Hongjun	(2008, Institute of Physics, CAS, China)
East Team	(2009, Institute of Plasma Physics, CAS, China)

MENG, Jie (2009, Beijing University, China)
FENG, Dong-Lai (2010, Fudan University, China)
WEN, Hai-Hu (2010, Institute of Physics, CAS, China)
HO, Pei-Ming (2011, National Taiwan University, Taiwan)
DAI, Xi (2012, Institute of Physics, CAS, China)
FANG, Zhong (2012, Institute of Physics, CAS, China)
JIA, Jin-Feng (2013, Shanghai Jiao Tong University, China)
ZHOU, Xing-Jiang (2013, Institute of Physics, CAS, China)
HAN, Yilong (2014; Hong Kong University of Science and Technology)
YAO, Wang (2014; University of Hong Kong)
MA, Yugang (2015; Shanghai SINAP)
SUN, Qing-Feng (2015; Peking University)