

# The International Union of Pure and Applied Physics: Young Scientist Prize 2016

The International Union of Pure and Applied Physics (IUPAP) comprises of 18 Commissions for various areas in Physics and also four affiliated Commissions.

Depending on the year, some of the IUPAP commissions award a prestigious Young Scientist Prize. Seventeen promising physicists received the award for the year 2016 from twelve commissions. Some of these commissions gave away more than one award. Moreover, in recent years, there are a number of awardees whose work arose primarily from their research in the Asian region, in particular, we would like to highlight five awardees and their achievements

## IUPAP 2016 Young Scientist Prize from the Commission on Magnetism (C9)



**Dr. Wei Han**, Peking University, China

*“For significant contributions to spin injection, spin transport and spin relaxation in graphene, and to the discovery of interface transparency and triangular antiferromagnetic  $\text{IrMn}_3$  for spin orbit torque in magnetic heterostructures.”*

The award will be presented to Dr. Han at the next International Conference on Magnetism (ICM), which will take place in San Francisco, July 15-20, 2018.

Dr. Wei Han has been a tenure-track assistant professor at the International Center for Quantum Materials (ICQM) at Peking University since 2014. He received

his Ph.D. in physics at the University of California, Riverside in 2012. Then, he spent two and a half years at IBM Almaden Research Center as a postdoctoral associate. Dr. Han’s main research focus has recently been on graphene spintronics, spin orbit torque in magnetic heterostructures, and two-dimensional quantum interfaces/materials. Dr. Han is the recipient of the 2009 AVS Leo Falicov student award and the 2012 APS GMAG student dissertation award.

## IUPAP 2016 Young Scientist Prize from the Commission on Structure and Dynamics of Condensed Matter (C10)

**Dr. Wenzhong Bao**, Professor, Department of Microelectronics, Fudan University, China

*“For his outstanding contribution in electrical and mechanical properties of the low-dimensional quantum materials.”*



From left to right: Sharon Glotzer (University of Michigan), Chair DCMP; Wenzhong Bao (Fudan University), YSP C10 2016 winner; Laura Greene (National MagLab and Florida State University) DMP Past Chair and IUPAP C10 Vice Chair; John Mitchell (Argonne Nat)

Dr Wenzhong Bao received his B.S. degree in Nanjing University, China in 2006 and Ph.D. from Department of Physics and Astronomy at the University of California, Riverside in 2011, then worked as a postdoctoral researcher at University of Maryland, College Park. He has been at the present position since 2015.

### IUPAP 2016 Young Scientist Prize from the Commission on Particles and Fields (C11)



**Dr Liangjian Wen,**  
Chinese Academy of Sciences

*“For his original contributions to the physics of neutrinos, and in particular, to the discovery of the non-zero neutrino mixing angle  $\theta_{13}$ ”*

Dr Liangjian Wen is an Associate Research Fellow at the Institute of High Energy Physics (IHEP), Chinese Academy of Sciences, Beijing. He graduated from the University of Science and Technology of China (USTC) in 2005, and received his Ph.D. from IHEP in 2010. He has worked on the measurement of  $\theta_{13}$  at Daya Bay experiment, on the search of neutrino-less double beta decays ( $0\nu\beta\beta$ ) with EXO-200/nEXO, and on the determination of the neutrino mass hierarchy (MH) with JUNO.

Dr Liangjian Wen made major contributions to the discovery of non-zero  $\theta_{13}$  at the Daya Bay reactor neutrino experiment, spanning from the design, construction and commissioning of the detector to the software and data analysis. In particular, he developed a new energy calibration scheme, an energy response model, and novel methods to reject backgrounds and determine systematics, which led to the rapid and precise measurement of  $\theta_{13}$ .



**IUPAP 2016 Young Scientist Prize from the Commission on Nuclear Physics 2016 (C12)**

**Dr Haozhao Liang,** RIKEN

*“For his development of a fully self-consistent random phase approximation (RPA) based on the density-dependent relativistic Hartree-Fock (RHF) theory*

*and for establishing a fully self-consistent charge-exchange quasi-particle RPA with both isovector ( $T=1$ ) and isoscalar ( $T=0$ ) proton-neutron pairing, based on the RHF-Bogoliubov framework. This result allows the systematic investigation of  $\beta$ -decay half-lives of neutron-rich nuclei and the  $\beta^+$  decays and electron captures of proton-rich nuclei with potential implications towards the remarkable speeding up of the astrophysical r-process flow.”*

After his Bachelor in 2005, Dr. Haozhao Liang continued his study in Peking University (PKU), China, by entering a 5-year Ph.D. program in theoretical nuclear physics. From 2006 to 2007, Haozhao visited Institut de Physique Nucléaire Orsay in France several times on a scholarship from the Asia- Europe Link Program. These visits were followed by his successful application for the co-supervision Ph.D. program funded by the French Embassy in China. In 2010, Haozhao obtained his Ph.D. degrees from both PKU and Université Paris-Sud under the co-supervision agreement, and he continued his work in PKU as postdoctoral fellow until 2012. Haozhao then joined the RIKEN Nishina Center as Japan Society for the Promotion of Science (JSPS) postdoctoral fellow, and later on Foreign Postdoctoral Researcher of RIKEN. Haozhao was promoted to tenured Research Scientist in RIKEN in April 2015, and he was invited as guest Associate Professor at the Graduate School of Science, the University of Tokyo from April 2016.

Dr. Haozhao Liang’s research interests are mainly in nuclear density functional theory (DFT), and the relevant interdisciplinary applications in nuclear physics, nuclear astrophysics, and particle physics. He was awarded the IUPAP Young Scientist Prize for his development of fully self-consistent theories within the relativistic DFT framework. This result allows the systematic investigation of  $\beta$ -decay half-lives of neutron-rich nuclei and the  $\beta^+$  decays and electron captures of proton-rich nuclei with potential implications for the remarkable speeding up of the astrophysical r-process flow.

### IUPAP 2016 Young Scientist Prize from the Commission on Atomic, Molecular and Optical Physics (C15)

**Dr Yu-Ao Chen,** University of Science and Technology of China (USTC)

*“For his outstanding contributions on quantum information and simulation”*



Prof. Toshiyuki Azuma, Chair C15 presenting the 2016 Young Scientist Prize to Dr. Yu-Ao Chen

Dr. Yu-Ao Chen received his Master's degree from the University of Science and Technology of China (USTC) at Hefei (China) in 2004, and his doctorate from Heidelberg University (Germany) in 2008 under the supervision of Prof. Jian-Wei Pan. After spending several years as postdoctoral researcher and project leader working with Prof. Immanuel Bloch in Germany, he returned to USTC at Shanghai (China) as professor to start up his own group in 2011.

He covers a wide range in the field of AMO physics. He has carried out numerous outstanding achievements, namely multi-photon entanglement in quantum information processing, quantum memory toward long distance quantum communication, and recent work on quantum simulation with ultra-cold atoms in optical lattices.

He has been awarded many prestigious prizes including the 2013 Fresnel Prize for fundamental aspects from the European Physical Society and the Qiu Shi Outstanding Youth Scholar in China.