AAPPS-APCTP CN Yang Award 2019

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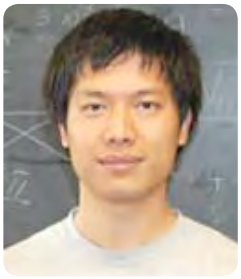
The CN Yang Award has been established to honor young researchers with prominent research achievements and to promote the development of leaders in physics in the Asia Pacific region. The award has been typically presented during the Asia Pacific Physics Conference. Recently, the Association of Asia Pacific Physical Societies (AAPPS) and the Asia Pacific Center for Theoretical Physics (APCTP) have jointly established the AAPPS-APCTP Chen-Ning Yang Award (CN Yang Award); consequently, starting from this year, the CN Yang Award has become an annual award. The AAPPS Council made new selection rules due the recent changes, and asked the member societies of AAPPS to recommend nominees for the award. Using these new rules, the selection committee, consisting of members of the AAPPS Council, AAPPS Divisions, and APCTP officers, has announced the first winners.

This year, out of 20 nominations, we have selected three outstanding young scholars to receive this prestigious award. It was a challenging choice, considering the diversity of their fields and the very high qualifications of all of the nominees. The originality of the candidates' works, their worldwide impact, and their future prospects were very important considerations in selecting the awardees.

In commemoration of their achievements, the citations of the awardees are listed below.

Igor AHARONOVICH (University of Technology Sydney)
"For his pioneering studies of quantum emitters in two-dimensional materials and wide bandgap semiconductors."

Aharonovich's group explores new quantum emitters in wide bandgap materials and aims to fabricate quantum nanophotonic devices on single chips for the next generation's quantum computing, quantum cryptography, and quantum bio-sensing needs. In 2016, Aharonovich led his team to discover the first quantum emitter in 2D materials operating at room temperature. He co-authored more than 100 peer reviewed publications, including one of the most cited reviews on diamond photonics. More recently, he has led his team to realize a new generation of plasmonic devices.



Xiong-Jun LIU (Peking University)

"For his outstanding contributions to ultracold atomic research, in realizing an original quantum simulation for synthetic gauge field and topological quantum phases."

Prof. Liu is one of the pioneers in quantum simulation for synthetic gauge field and topological quantum phases. He proposed the first model of the (quantum) spin Hall effect for ultracold atoms and has successfully realized one-dimensional spin-orbit coupling (Abelian synthetic gauge field) and two-dimensional spin-orbit coupling (non-Abelian synthetic gauge field) for ultracold atoms, in addition to establishing a systematic theory for realizing, engineering, and detecting topological phases. These works have advanced quantum simulation for synthetic gauge field and topological quantum phases to a highly active and broadly recognized research topic in ultracold atoms. Importantly, for condensed matter physics, he proposed the concept of symmetry protected non-Abelian statistics of Majorana zero modes in topological superconductors, which has added a new family member of non-Abelian statistics to quantum statistics and has fundamentally overturned the traditional view of non-Abelian statistics. His works have creatively changed the theory and has had a crucial impact on the related experimental investigations.

Song HE (Institute of Theoretical Physics, Chinese Academy of Sciences)

"For his critical role in advancing the understanding of the scattering amplitudes in gauge theories, gravity, and string theory."

Song He has played a key role in recent advances in better understanding the scattering amplitudes in gauge theories, gravity, and string theory. He is renowned for discovering new ways of computing scattering amplitudes and unraveling their elegant mathematical structures and hidden relations. Since Witten's celebrated proposal of twistor string theory in 2003, there has been enormous progress in computing and understanding the scattering amplitudes of quantum field theory (QFT), which is conceivably the foundation of particle physics. In this fast-growing frontier of theoretical high energy physics, Song He's works not only enable more precise predictions of the Standard Model for high-energy experiments, such as the LHC, but also shed new light on the structures of QFT and the fundamental issues in quantum gravity and string theory.