

The 2020 Fritz London Memorial Prize Winners

Qi-Kun Xue

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<http://www.stmbe.tsinghua.edu.cn/members/qi-kunxue>



Citation: *"The Fritz London Memorial Prize is awarded to Qi-Kun Xue in recognition of his pioneering work on the experimental discovery of quantum anomalous Hall effect and edge channel in magnetic topological insulators."*

Qi-Kun Xue has been, since 2005, a distinguished professor in Department of Physics, Tsinghua University where he was the Chair of Department of Physics and the Dean of School of Sciences (2010-2013), the Vice President for Research of Tsinghua University since 2013 and the Director of Beijing Academy of Quantum Information Sciences since 2017.

He received his BSc in optics at Shandong University in 1984, and PhD in condensed matter physics from Institute of Physics, the Chinese Academy of Sciences (IOP-CAS) in 1994.

From 1994 to 2000, he worked as a Research Associate at Institute for Materials Research, Tohoku University, Japan. He was a visiting Assistant Professor at

Department of Physics, North Carolina State University, USA from 1996 to 1997. He became a professor at (IOP-CAS) in 2000. He was elected into The Chinese Academy of Sciences in 2005.

He is a fellow of the American Physical Society (2015), and won TWAS Prize in Physics in 2010, inaugural Future Science Prize for Physical Sciences in 2016 and State Natural Science Award (the first prize) in 2018, He has been serving for IUPAP as a member of Commission on Semiconductors (C8) since 2014.

Qi-Kun's research has focused on concept driven epitaxial growth of novel quantum materials including semiconductors, topological insulators, and superconducting films, probing the atomic-scale electronic and magnetic properties, as well as development of scanning tunneling microscopy-based high spatial/energy resolution methods. With his colleagues and students at Tsinghua and collaborators at IOP, Qi-Kun demonstrated that ultra-thin films of FeSe on SrTiO₃ had dramatically enhancing superconducting transition temperatures. This work is recognized as a significant breakthrough in the field of superconductivity. The collimation of Qi-Kun's work to date is the work on topological insulators using molecular beam epitaxy, scanning tunneling microscopy and angle-resolved photoemission spectroscopy. His group was the first to discover the quantized anomalous Hall effect (QAHE) in magnetic topological insulator thin films. The QAHE represents the first and so far the only Landau-level-less quantized Hall effect since the discovery of anomalous Hall effect in 1881