Topological Quantum Materials Researches; Quantum Magnetism and Kagome Metals

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Quantum technology, represented by quantum information technology, has been issued for the next generation technology inheriting the modern digital information technology. Recently, great progress in the quantum computing and information devices has been made around world. However, truly successful inheritance as the next generation technology certainly requires revolution especially in materials as like the discovery of semiconductor in the modern technology. In this lecture, I will first briefly introduce novel quantum materials research activities and perspectives in the Max Planck POSTECH/KOREA research initiative (MPK). Secondly, I will discuss research results in the Kitaev quantum spin liquid system and in topological Kagome metals in relation with nontrivial quantum phenomena including superconductivity.