PhLAM RESEARCH SEMINAR SERIES

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Quantum information: from quantum foundations to quantum technologies

by

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Quantum information theory explores how information is processed and transmitted in quantum systems, revealing fundamental aspects of quantum theory. It sheds light on phenomena like entanglement and superposition, key to advancing quantum technologies. Harnessing these principles will enable quantum computing, cryptography, and communication, promising unprecedented computational power and secure data transmission. Thus, quantum information is essential for both unraveling the mysteries of the quantum world and unlocking technological advancements. In this seminar, I will first provide a broad overview of the field, with its promises and challenges. Subsequently, I will explain how quantum information and quantum technologies can be used to test aspects of the foundations of quantum theory.