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Materializing quantum technologies

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Quantum information science (QIS) holds great promise to revolutionize applications such as sensing, communication, and computing. Sensing gravitational waves, ultra-secure communication networks, and solving hard computational problems are a few exciting examples. However, to realize this potential of QIS, materials design and optimization will be crucial. In particular, identifying strategies to synthesize, manipulate, and address the basic units of quantum information (called ‘qubits’) is an outstanding challenge. In this presentation, I will talk about the role of computational materials science in designing promising qubits for quantum technologies. I will also talk about how growing compute power, including those of quantum computers themselves, can enable accurate and realistic materials simulations. I will end with future prospects for this field, and also share a little about my career trajectory (it’s always fun to make people guess my undergraduate degree- rarely do they guess it right!).

Presenter: Dr SOMJIT, Vrindaa (Postdoctoral research scholar, Materials Science Division, Argonne National Lab)

Session Classification: Plenary talk