Landing page
Our experimental research group studies physical properties of low dimensional condensed matter systems. We use advanced nanofabrication techniques combined with controlled sample growth to design and develop sub-micron devices. These devices will be used to explore microscopic mechanisms that influence and/or dictate the fundamental physical properties at the nanometer scale level. We explore electron transport in superconducting wires, CDW materials, oxide nanomaterials under extreme conditions: ultra low temperatures (10 mK), high magnetic fields (16 T) and a.c. electric fields (~GHz). Some of our physics interests include quantum phase transitions (e.g. superconductor-insulator transition), conduction in superconducting wires, phase transition in single nanowires, microwave spectroscopy to study collective phases in graphene monolayers, superconducting films etc..

PhD work centers on understanding the electronic characteristics of complex oxides. His project involves characterizing materials like vanadium oxides to reveal new insights into phase stability and functional properties.

PhD project focuses on investigating the electronic properties of correlated materials, particularly for applications in neuromorphic computing and next-generation memory. His research includes exploring resistive switching mechanisms in materials like NbO₂ and ZIF-8.

He is working on the development of oscillators for neuromorphic computing applications. His research focuses on designing and optimizing oscillators that mimic the behavior of biological neural networks.