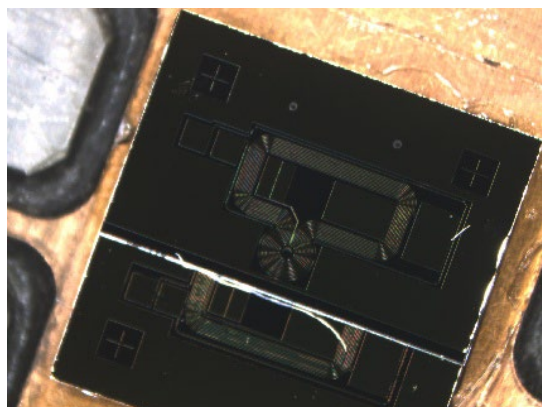


Master's thesis project

Superconducting Films for Magnetic Traps

Background: A fundamental question in modern physics is whether quantum behavior can be observed in macroscopic objects. Theory sets no upper limit on the size of a quantum system, yet experiments have so far been confined to the microscopic realm. This project bridges that gap by developing **magnetic traps** that levitate and manipulate superconducting microparticles, providing a controlled environment in which to study the transition from quantum to classical behavior.

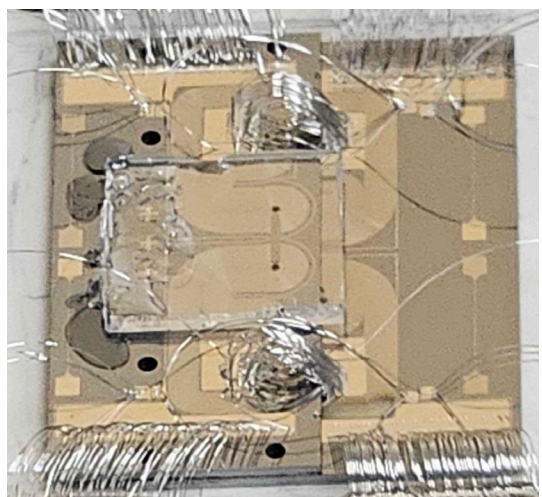


A chip-based magnetic trap

What you will do

The project has the following aspects:

- Fabrication of superconducting trap devices (eg using MgB_2 films)
- Inspection of the fabricated films using AFM, SEM, and optical microscopy
- Electrical characterization of the superconducting films in a cryostat



Full assembly of a magnetic trap

What you will learn

- Cleanroom fabrication techniques, and quality control with metrology tools such as AFM
- Physics of superconductors
- Electrical characterization of superconductors
- Sample characterization at cryogenic temperatures
- Teamwork in a stimulating research environment

Questions? Feel free to contact us:

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