



Project Proposal for Ph.D.

Project Details

Project Title	Real-time high resolution imaging of microscopic and macroscopic particles for the applications in quantum computing and fluid dynamics
Project Summary (Minimum 500 and maximum 2000 characters)	The project will involve design of a high resolution imaging system for atoms and sub-micrometer sized particles. This will be used for studying real time velocity distribution of these particles. The velocity distribution contains the information about the energy of the particle and the trajectory of the particle. These information's are building block for studying and characterizing time dependent dynamics of particles at atomic and sub-micrometer sizes. The application ranges from studying micromotion of single atoms in optical tweezer traps and characterizing flow dynamics of microparticles in various practical scenarios.

Ph.D. Supervisors

Role	Faculty	Academic Unit in IITD/Institute/University	Email ID (Official)
Supervisor 1	Prof. Bodhaditya Santra	Physics	bsantra@physics.iitd.ac.in
Supervisor 2	Prof. Debabrata Dasgupta	Mechanical Engineering	debabrata@mech.iitd.ac.in

Project requirements (Student qualifications, experience required, etc)

- MSc/MTech in Physics/Electronics/Mechanical engineering or BTech in Electronics/Mechanical engineering or related disciplines
- Fundamental knowledge on Physics, Mechanical design, Optics, Electronics
- Valid CSIR-NET or GATE score
- Good communication skill
- Willing to work in interdisciplinary research team involved in cutting edge design, manufacturing and characterizing

Source of fellowship/funding

(CSIR/UGC/DBT/ICMR/ICAR/NEET-PG/DST-INSPIRE/IRD/FITT Project details, if any)

Funding through project number: RP04121G

Role of Faculty Members involved:

Asst. Prof. Bodhaditya Santra (Physics): Opto-mechanical design of the setup and analysis/interpretation of the Quantum mechanical results

Asst. Prof. Debabrata Dasgupta (ME): Mechanical design of the setup and analysis/interpretation of fluid dynamics results