Riccardo Pallucchi – Curriculum Vitae

Work experience

- **PhD in Physics** [01/11/2023 – Current]
  Sapienza University of Rome (Rome, Italy, PNRR project)
  Development of scalable quantum dot sources at different wavelengths – Study and control of the optical properties of semiconductor nanowires for the development of quantum technologies.
  The project involves the investigation and post-growth control of the optical properties of III-V semiconductor nanowires (NWs), which represent good candidates for microscale electronic, photonic and quantum devices. The work focuses on heterostructured dilute nitride NWs characterized by different amounts of nitrogen content, due to the possibility of a post- growth tailoring of the bandgap. This leads to the capability of fabricating quantum dots, a reliable and controllable single-photon source.
- **Grant holder** [25/05/2023 – 31/10/2023]
  CNR - Institute of Complex Systems (Rome, Italy)
  Real-time optical transmission spectroscopy measurements applied to the study of colloidal systems and microgels with varying chemical-physical parameters (concentration, temperature, pH), in the framework of the following projects: “SOSPESO - Sospensioni e aerosol: densità ed evoluzione mediante spettroscopia ottica” “Microgels: Simulazioni, esperimenti e applicazioni"
  This included: optical setup design, building and tests; optical transmission spectroscopy measurements; development of a software in Python for real-time spectra acquisition and elaboration; literature research; chemical samples preparations; poster presentations to international conferences.

Education and training

- **Master’s degree in Condensed Matter Physics** [01/01/2020 – 01/03/2023]
  La Sapienza University of Rome (Rome, Italy)
  Thesis: Optical transmission spectroscopy for the investigation of the aggregation dynamics of plasmonic colloids
- **Bachelor’s degree in Physics** [01/09/2015 – 01/12/2019]
  La Sapienza University of Rome (Rome, Italy)
  Thesis: Neural networks and Machine Learning: application to the selection of Higgs bosons in the tau leptons decay channel

PUBLICATIONS

- [2025] - **Bandgap Engineering On Demand in GaAsN Nanowires by Post-Growth Hydrogen Implantation** (under review)
  Authors: Nadine Denis, Akant Sagar Sharma, Elena Blundo, Francesca Santangeli, Paolo De Vincenzi, Riccardo Pallucchi, Mitsuki Yukimune, Alexander Vogel, Ilaria Zardo, Antonio Polimeni, Fumitaro Ishikawa, Marta De Luca
- [2025] - **Nitrogen-induced strain in highly mismatched III-V heterostructured nanowires: a Raman spectroscopy investigation** (in preparation)
  Authors: Riccardo Pallucchi, Akant Sagar Sharma, Nadine Denis, Paolo De Vincenzi, Francesca Santangeli, Ilaria Zardo, Fumitaro Ishikawa, Riccardo Rurali and Marta De Luca