

EDUCATION

University of Perugia, Department of Physics and Geology

November 2018 - Present

PhD course in Science and Technology for Physics and Geology

Curriculum: Physics

Thesis: Lattice dynamics and electronic properties in Transition Metal Dichalcogenides under high-pressure

Supervisors: Professor Caterina Petrillo and Professor Silvia Corezzi

Sapienza University of Rome, Department of Physics

2015-2018

Master Degree in Physics, graduated summa cum laude

Thesis: Angle Resolved Photoemission Spectroscopy on Transition Metal Dichalcogenides

Supervisor: Professor Paolo Postorino

Sapienza University of Rome, department of Physics

2011-2015

Bachelor's degree in Physics

INTERNATIONAL SCHOOLS AND CONFERENCES

Hercules, European School of Neutron and Synchrotron Radiation, Grenoble (France)

2019

Hercules is a five weeks course coordinated by the Université Grenoble Alpes (UGA). The school provides training for selected young researchers from international universities and laboratories, in the field of Neutrons, X-ray Synchrotron Radiation, and Free Electron Laser for condensed matter studies. It includes lectures, practicals, tutorials, and visits of Large Facilities: ALBA in Barcelona, KIT in Karlsruhe, DESY and European XFEL in Hamburg, Elettra and FERMI in Trieste, ESRF and ILL in Grenoble, SOLEIL in Paris-Saclay, and PSI in Villigen.

ICONS: International School on Nonlinear Vibrational Spectro-Microscopy, Roma (Italy)

2020

ICONS is structured around comprehensive review talks from world leading experts in complementary areas of nonlinear Raman spectroscopy both on theory, experiments and applications. The aim of the school is to provide high level-expertise for young researchers and students interested in nonlinear Raman spectroscopy, applied to access dynamical and microscopic properties at the molecular and condensed matter levels.

Oral Presentation at the Italian national conference on the physics of matter, Catania (Italy)

2019

Title: Infrared study of the pressure-induced metallization in bulk 2H-MoTe₂

Oral Presentation at the National Congress of the Italian Physical Society, L'Aquila (Italy)

2019

Title: Infrared study of the pressure-induced metallization in 2H-MoTe₂

AWARDS

Award for best presentation at the National Congress of the Italian Physical Society

2019

EXPERIENCES AT INTERNATIONAL LARGE-SCALE FACILITIES

- Principal Investigator in a high-pressure infrared measurement during a beamtime at Soleil synchrotron, St. Aubin (France)** *2020*
Title: High-pressure and low-temperature study of the Fano resonance in semiconducting Transition Metal Dichalcogenides (TMDs)
Proposal number 20200824, beamline SMIS
- Principal Investigator in a high-pressure infrared experiment during a beamtime at Soleil synchrotron, St. Aubin (France)** *2020*
Title: Investigation of the MoTe₂ electronic properties by low-temperature and high-pressure infrared spectroscopy
Proposal number 20191765, beamline SMIS
- Participant in a time-resolved EUV Thomson scattering experiment during a beamtime at Fermi Free-Electron-Laser, Trieste (Italy)** *2020*
Title: Thomson scattering at low momentum in warm dense matter: a pivotal pump and probe experiment
Proposal number 20194032, beamline TIMEX
- Participant in a nano-ARPES experiment during a beamtime at Diamond synchrotron, Didcot (UK)** *2019*
Title: Nano ARPES Study of Black Phosphorus
Proposal number SI21703-1, beamline I05
- Participant in a high-pressure infrared experiment during a beamtime at Soleil synchrotron, St. Aubin (France)** *2018*
Title: Infrared study of the pressure induced metallization in the transition metal dichalcogenide MoTe₂
Proposal number 20171166, beamline AILES
- Principal Investigator in micro-ARPES experiment during a beamtime at Elettra synchrotron, Trieste (Italy)** *2018*
Title: Magnetic proximity effects in few layers TMDs systems
Proposal number 20175336, beamline APE-LE

PUBLICATIONS IN SCIENTIFIC JOURNALS

- Broadband Infrared Study of Pressure-Tunable Fano Resonance and Metallization Transition in 2H-MoTe₂** *2021*
Authors: [E. Stellino](#), F. Capitani, F. Ripanti, M. Verseils, C. Petrillo, P. Dore, P. Postorino
Under revision on Physical Review Material Journal
- Infrared Study of the Pressure-Induced Isostructural Metallic Transition in Mo_{0.5}W_{0.5}S₂** *2021*
Authors: [E. Stellino](#), F. Ripanti, G. Nisini, F. Capitani, C. Petrillo, P. Postorino
Journal of Physical Chemistry C 125: 28
- Effects of the annealing of amorphous Ta₂O₅ coatings produced by ion beam sputtering concerning the effusion of argon and the chemical composition** *2021*
Authors: A. Paolone, E. Placidi, [E. Stellino](#), et al.
Journal of Non-Crystalline Solids 557: 120651
- Pressure evolution of the optical phonons of MoTe₂** *2019*
Authors: [E. Stellino](#)
Il Nuovo Cimento C 43:405

First- and second-order Raman scattering from MoTe₂ single crystal

2018

Authors: S. Caramazza, A. Collina, E. Stellino, F. Ripanti, P. Dore, P. Postorino
European Physics Journal B 91: 35

Papers in preparation:

Coherence effects in Thomson scattering on graphite in the extreme ultraviolet

Authors: C. Fasolato, E. Stellino, E. Principi, R. Mincigrucci, J.S. Pelli-Cresi, L. Foglia, P. Postorino, F. Sacchetti, and C. Petrillo

Infrared Study of Pressure-Tunable Fano Resonance and Metallization Transition in 2H-MoS₂

Authors: E. Stellino, F. Capitani, G. Nisini, C. Petrillo, P. Postorino

TUTORING ACTIVITY

Co-Supervisor of Master's Degree theses:

- Title: Photoluminescence of compressed MoS₂ and WS₂: excitonic transitions in the high pressure regime
Candidate: Beatrice D'Alò, AA 2020/2021
- Title: Infrared study of the Fano resonance in phonon mode of Transition Metal Dichalcogenides
Candidate: Angelo Tavella, AA 2021/2022

Co-Supervisor of Bachelor's Degree thesis:

- Title: Studio della risonanza di Fano su sistemi bidimensionali
Candidate: Michele Bagaglini, AA 2020/2021

Co-Supervisor for the exam of Physics Laboratory, Sapienza University of Rome

- Title: Spettroscopia Raman ad alta pressione su MoS₂
Candidate: Alice Margherita Finardi AA 2020/2021
- Title: Spettroscopia di fotoluminescenza su cristalli TMD al variare del numero di layers
Candidate: Beatrice D'Alò, AA 2020/2021
- Title: Analisi dello spettro Raman di MoS₂ e WS₂ al variare del numero di layers
Candidate: Daniele Angelini, AA 2020/2021

RESEARCH EXPERIENCE

Experimental tools

- Micro-Raman spectroscopy
- Photoluminescence spectroscopy
- Infrared spectroscopy
- ARPES and SPIN-ARPES
- Development of optical apparatuses
- Preparation and use of high-pressure set-ups

Computational tools

- C language
- Python
- Programs for data analysis:
Origin, Igor, Gnuplot
- Others: Latex, Inkscape

LANGUAGES

Mother tongue: Italian

Other languages: English

Cambridge certificate in Advanced English (CEFR level C1)

08/2021