

ELENI KOUTSIONA

 Eleni Koutsiona |  Institute of Astrophysics | Nationality: Greek, American

EDUCATION

- **Heidelberg University**, Master of Science in Physics (Astrophysics) **Oct 2024 - present**
- **University of Crete**, Bachelor of Science in Physics **June 2024**
- **Aarhus University**, Erasmus Exchange - Studies **Feb - June 2021**
Enrolled in advanced elective courses: Advanced Cosmology (Graduate Level), Lasers & Optics Laboratory

EXPERIENCE

- **Internship:** Max Planck Institute for Astronomy **July - Aug 2024**
Analysis of optical spectra of distant star-forming dusty galaxies to determine spectroscopic redshifts, metallicities, and kinematics
Supervisor: Dr Ugne Dudzeviciute
- **Internship:** Okayama Observatory, Kyoto University **Oct 2023 - March 2024**
Spectroscopic and photometric observations, data reduction and analysis for transients, with a focus on supernovae. Involved in classification of [SN2023uta](#) and [SN2023ucy](#)
KyotoNova group, Supervisor: Prof. Keiichi Maeda
- **Internship:** Skinakas Observatory, Institute of Astrophysics, FORTH **May - Oct 2023**
Polarimetric, spectroscopic, photometric observations, training in large aperture telescope operation

PUBLICATIONS

- **Co-authored:** Mandarakas, N., et al., Zero-polarization candidate regions for calibration of wide-field optical polarimeters. A&A, DOI: 10.1051/0004-6361/202348099. [arXiv:2312.06435](#) **April 2024**
- **Co-authored:** Kangas, T., et al., The enigmatic two-peaked stripped-envelope SN 2023aew. Submitted in A&A. [arXiv:2312.06435](#) **Jan 2024**
- **Primary Author:** Koutsiona, E., et al., Enhanced Urban Area Mapping Across Pan-European Landscapes using Sentinel-2 Imagery. **in preparation**
Application of cloud masking and creation of a spectral library to train an X-SVM algorithm, improved with DTM data, to develop a land cover map of Europe
[RSLab](#) - [FORTH](#), Supervisors: Dr. N. Chrysoulakis, I. Lantzanakis

PROJECTS

- **Thesis:** Spatially resolved dust attenuation in Luminous Infrared Galaxies **Feb 2023 - June 2024**
Using JWST observations to study the emission of H-recombination lines and obtain spatially resolved maps of the dust attenuation towards star-forming regions in nearby luminous infrared galaxies
Supervisor: Dr. T. Diaz-Santos
- **Research Project:** Spectral characterisation and estimate of basic properties of Type II supernova 2023rky **Oct 2023 - March 2024**
Supervisor: Prof. Keiichi Maeda
- **Coursework Project:** Photocatalytic degradation of pollutants **May 2023**
Studied pollutant (PABA) degradation through the mechanism of photocatalysis using TiO₂ as the catalyst
Institute of Electronic Structure and Laser - FORTH

- **Experimental Design Project:** Experimental setup for high-accuracy measurement of the width and distance between interference fringes **Sept 2021 - Feb 2022**
Designed setup has since been implemented in the Undergraduate Optics Lab
Supervisor: Prof. P. Rakitzis
- **Coursework Project:** Estimation of the mass of exoplanet 51-Peg-b **Nov 2022**
Implemented the Lomb-Scargle periodogram on [NASA exoplanet archive data](#), to determine the period of variations in radial velocity of a star, and calculated the mass of the exoplanet using the Doppler spectroscopy method
- **Citizen Science Project:** Supernova Hunters **Oct 2022**
Contributed to discovery of PSN transients [2022ynb](#) and [2022xwl](#)

SEMINARS & WORKSHOPS

- **Conference:** [Transient and Supernova WS 2023](#) **Dec 2023**
Presentation Title: 'Support Vector Machines: From Remote Sensing to Supernovae Classification'
- **Conference:** [Workshop of Theoretical Astronomy 2023](#), Kyoto University **Dec 2023**
Presentation Title: 'Near and mid-infrared line emission analysis of starburst galaxy NGC7469'
- **Seminar:** Radiative Transfer **June - Sept 2023**
Organised and ran an online, biweekly seminar on radiative transfer targeted towards graduate students, under the instruction of Prof. Keiichi Maeda
- **Workshop,** Machine Learning, University of Crete **July - Aug 2023**
An intensive hands-on seminar on Machine and Deep Learning techniques, covering fitting methods, classification, clustering, regression, and others
- **Workshop,** Introduction to Data Analysis with Python, University of Crete **Oct 2022**
A 6-week intensive course on implementation of Python methods for data pre-processing (data cleaning, handling of missing values, feature representation etc), analysis, and visualisation.

SKILLS

- Lasers and Optics Laboratory: Continuous-wave (CW), Q-switched (nanosecond), and mode-locked (femtosecond) lasers, non-linear optical methods, UV-Vis spectroscopy
- Programming Languages: Python, C
- Scientific Programming Tools: IRAF/PyRAF, DS9, Origin, Lammmps, OVITO, Matlab, QGIS, L^AT_EX
- Amateur Telescope Operation: 8 inches diameter Dobsonian Telescope (regular user), 9.8 inches Schmidt – Cassegrain Telescope (regular user), 12 inches Meade LX200 Telescope (beginner user)
- Diving Certifications: PADI Advanced Open Water, PADI Open Water
- Basic Life Support Provider, European Resuscitation Council

LANGUAGES

- Greek: Native Speaker
- English: IELTS Academic score: 8.5/9 (Nov 2023), TOEFL-iBT score: 114/120 (Oct 2020), & Certificate of Proficiency by the University of Michigan (2015)
- German: GOETHE Zertifikat B2 (2016)

VOLUNTEERING & ACTIVITIES

- **Content writer for [Uni-mag](#)** **May 2023 - present**
Wrote and published two articles of scientific content for astronomy themed online magazine Uni-mag

- **FIRST LEGO League, Robotics Competition** Feb 2023
Participated as a referee
- **IAU NameExoworlds** Dec 2022
Assembled and led participating group, organised outreach event
- **Student Astronomy Club, University of Crete** Sep 2018 - present
Responsible for group logistics, organising and participating in weekly meetings, presentations, public observations, lectures, and various events including European Researchers' Night and World Space Week
- **Tutoring** 2019 - present
Tutoring peers in physics and programming related courses
- **Local animal shelter** 2018 - present
Fostering stray animals, assisting in adoption process
- **Scouts of Greece** 2007 - present

AWARDS & COMPETITIONS

- **ESA's Space Juice Contest: Runner-up** 2023
- **LaSciL - Picture of the month** 2022
- **Regional EUSO – PANEKFE: Third Place** 2017
Third place in Physics, Chemistry, and overall in the Regionals of the European Union Science Olympiad
- **Regional EUSO – PANEKFE: Third Place in Biology** 2016
- **National Mathematics Competition "Euclid" – Hellenic Mathematical Society** 2014
Qualified through competing in preliminary competition "Thales"

RESEARCH INTERESTS

- Starburst and (ultra) luminous infrared galaxies, star-forming and HII regions, interstellar medium
- Supernovae and extragalactic transients, radiation transfer
- Optical polarimetry
- Remote sensing, urban land cover
- Supervised classification algorithms