

Training Opportunity for Polish National Trainees

Reference	Title	Duty Station
PL-2023-OPS-GSO	Optical Observations of Orbital Objects	ESOC, Darmstadt

Overview of the mission:

The Optical Technologies (OPS-GSO) section at ESOC is developing technology for optical ground stations: ranging from free-space optical communication over satellite laser ranging, space debris and near-Earth objects surveillance to photonic frequency and timing distribution. Our mission is to be at the forefront of technological innovation and to transfer novel technologies to satellite operations.

Candidates are encouraged to visit the ESA website: <http://www.esa.int>

Overview of the field of activity proposed:

Optical observations of objects in various orbital regimes have become an essential tool to monitor specific orbital environments (e.g. in proximity of GEO satellites) and maintain satellite catalogues not accessible with the required precision with radar surveys.

On the one hand they are used to reduce the uncertainty on collision warnings and on the other hand they give an insight into the dynamics following a collision event in orbit, which we would be largely blind to without these ground based optical sensors.

These observations are used to create timely situational awareness of Earth orbiting objects after events in a particular region, e.g. after changes to the current object catalogue.

As a Polish National Trainee, you will focus upon the acquisition and end-to-end data delivery of optical observations – from ground instrument design over raw data acquisition to the delivery of actionable data products.

During your traineeship you will

- design optical instruments for optical observations (cameras, telescopes, readout, and processing).
- characterise instrument performance.
- use the ESOC IZN-1, IZN-2, TBT-1 and TBT-2 optical ground stations to acquire optical observations.
- elaborate concepts how to extract actionable, high-quality data from optical observations.
- discuss with polish national industrial and academic partners on the elaborated concepts as part of ongoing ESA contracts.
- work towards industrialisation of a polish optical space observation service.

After your traineeship in a small, highly motivated, and international team, you will have an in-depth view on state-of-the art optical ground station technology, optical orbital observations and space safety and security initiatives in Europe and particularly in Poland.

Required education and skills:

- You should have just completed or be in the final year of your Master' s degree in physics, engineering, geodetical sciences or other related technical engineering studies.
- You should have experience with optical or photonics systems, numerical data analysis.
- Good interpersonal and communication skills
- Ability to work in a multi-cultural environment, both independently and as part of a team
- Fluency in English and/or French, the working languages of the Agency