**Microproject:**

**Spectral axis calibration**

**of compact spectrometers**

**operating on the GOLEM tokamak**

Since August 2024, the GOLEM tokamak, in operation at the FNSPE CTU in Prague, has been equipped with five compact spectrometers. The spectrometers, depending on the installed diffraction grating, measure electromagnetic radiation from the plasma in the near ultraviolet (through visible light) to near infrared spectral ranges. The manufacturer provided the spectral axis calibration, which was valid shortly after the delivery of each spectrometer and only under the conditions specified in the calibration protocol. The spectral axis calibration was remeasured using two spectral calibration sources (Ar+Hg and Ne) in 2024 under conditions specific to GOLEM, and part of the data has been already processed. The aim of the work is to process the rest of the measured data, summarize the available results and provide new spectral axis coordinates for all used compact spectrometers.

The same method will be used for the spectral axis calibration of many spectrometers on the COMPASS-U tokamak at the Institute of Plasma Physics of the Czech Academy of Sciences in the near future. In addition, it is possible to participate in laboratory tests of the new soft X-ray spectrometer and its implementation on the COMPASS-U tokamak.

**Required skills:**

1. Basic level of programming in python, i.e. use of Jupyter notebooks

**Tasks for the student:**

1. Be acquainted with the spectral axis calibration procedure.
2. Process the rest of the measured calibration data.
3. Summarize the available results and provide new spectral axis coordinates for all compact spectrometers used on GOLEM.

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**References:**

[1] Ocean Optics, *Wavelength Calibration Light Source. Installation and Operation Manual*. Document: 27-MNL-WCS-2, Version: 1.0, 2018; available at https://www.oceanoptics.com/wp-content/uploads/2024/07/Wavelength-Calibration-Products-v1.0\_0724.pdf