

# PhD position offered

## Development of novel x-ray probes for the study of structure and transport properties of astrophysically relevant dense plasmas

### Project description:

The primary interest of this Helmholtz Young Investigator at the Institute of Radiation Physics at the Helmholtz-Zentrum Dresden-Rossendorf is experimental plasma physics. The main interest of the research project is to develop new approaches to understand the transport properties and structure of plasmas in a strongly coupled regime, or 'warm dense matter', relevant to astrophysical objects, fusion technology and material science. Novel x-ray sources driven by femtosecond lasers will be developed to generate extreme states of matter and study the non-equilibrium dynamics of these systems. The experimental work is carried out at the DRACO laser based at HZDR and high-power laser facilities worldwide.

### Work tasks:

The PhD project will focus on the development of the x-ray diagnostics sources for x-ray scattering and absorption spectroscopy for experimental plasma physics with main focus on dense plasmas. The work will involve planning and carrying out experiments at PW class laser facilities. There will be a substantial work associated with target design. The student will be expected to design novel x-ray spectrometers and x-ray probes based on Laser Wakefield Acceleration and micro-structured targets. The student will also get an opportunity to get involved in combining the x-ray diagnostics with laser proton acceleration for multi-beam experiments. The project will be primarily experimental with an option to also work on computational simulations and theory.

### Requirements:

- Good Master's degree in Physics or a related subject
- Solid background in Physics, Mathematics and basic programming skills
- Good laboratory skills
- Very good command of English
- Interest in plasma physics and lasers
- Experience with lasers, optics, diagnostics or data analysis is not essential, but very welcome

**Starting date:** after 1/Sep/2020 (duration: 3 years)

**Contact:** Dr. Katerina Falk (group leader) – [k.falk@hzdr.de](mailto:k.falk@hzdr.de)

Please submit your application including a motivation letter, research interests, curriculum vitae and copies of education certificates by June 30, 2020 via [Online application](#).

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