

## Thesis Topic Proposal

Institute of Physics, Czech Academy of Sciences

**ELI Beamlines laser centre**

Degree Level: Bachelor/Master/PhD

Starting date: Upon an agreement

### Design of a Novel Ambient Dosimeter

#### Topic Characteristics/Abstract:

ELI Beamlines is a laser driven user facility located just south of the city of Prague. It aims at investigating high-field high-density physics, developing high-brightness sources of X-rays, as well as secondary proton, electron, and ion beams, for interdisciplinary applications in physics, medicine, biology, and material sciences. A laser-based facility as unique as ELI Beamlines poses unique challenges from a radiation protection view point. Currently available dosimeters are not well suited for high-energy pulsed fields. Therefore, there is a need to design a novel dosimeter badge, which would allow for a reliable determination of the dose, dose rate, and the energy of particles.

The novel dosimeter will be designed and developed relying on experimental data and Monte Carlo simulations. Optically stimulated luminescence, thermoluminescence dosimeters, and film dosimeters will be used. The successful prototype design will be subsequently produced in-house and integrated in the radiation monitoring system of ELI Beamlines.

#### Scope:

Design and development of a novel ambient dosimeter suited for high-energy pulsed fields. This ambient dosimeter will become an integral part of the ELI Beamlines radiation monitoring system.

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#### Application:

Send your application including your CV/Resume and motivation letter describing why are you interested in this particular topic to Ms. Andrea Fürst via [andrea.furst@eli-beams.eu](mailto:andrea.furst@eli-beams.eu)