Title: **Ultrafast Pump–Probe Spectroscopy with Laser-Driven Sources**

Supervisor: Ondrej Hort, Ph.D. (ondrej.hort@eli-beams.eu)
supervisor-specialist: Ing. Jaroslav Nejdl, Ph.D. (Jaroslav.nejdl@fjfi.cvut.cz)

program: Physical Engineering, Quantum Technologies

Abstract:
Develop a dual-beam pump–probe platform spanning THz to XUV with independent sub-fs / few-fs pulses and delay control from <100 fs up to ~1 ms. Use laser-driven XUV (HHG) probes to interrogate:
1) Femtosecond electronic and structural dynamics in molecules, solids, nanostructures, and warm-dense matter.
2) Microsecond–millisecond relaxation, trapping, phase evolution, and defect dynamics.
3) Cross-spectral correlations (THz↔NIR↔XUV) to connect charge transport with band-structure and core-level responses.