

Course code	CTU18
Course title	Physics of Extreme Systems
Institution	Czech Technical University in Prague
Course address	Trojanova 13, Prague 2
City	Prague
Minimum year of study	4th year
Minimum level of English	Good
Minimum level of French	None
Key words	Extreme states of matter, high-energy-density physics, superstrong fields, nucleoreactive plasmas, frontier physics, inertial confinement fusion, exotic matter physics, PALS, ELI
Language	English
Professor responsible	Ladislav Drska
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Participating professors	M. Kalal, R. Liska, J. Nejdil (IOP), J. Psikal, M. Sinor, J. Ullschmied (IPP)
Number of places	Minimum: <u>5</u> , Maximum: <u>20</u> , Reserved for local students: <u>5</u>
Objectives	Introduction to high-energy-density and strong-field physics : theory, simulation, facilities, experiment. - Presentation of key applications of high-energy-density physics: frontier physics studies, laboratory astrophysics, inertial confinement fusion .
Programme to be followed	<p>(1) Introduction. - Preludium: Modern Physics: Lasers, Plasmas, Nuclei. - Postmodern Physics & Extreme Systems. - <i>Lab. Visit 1, Part 1: FNSPE - Dept .of Physical Electronics.</i></p> <p>(2) Physics of Extreme States of Matter. - Subpicosecond / Superstrong Field Photonics. - <i>Lab. Visit 1, Part 2: FNSPE - Dept. of Physical Electronics.</i></p> <p>(3) Physics of Nucleoreactive Plasmas. - Inertial Confinement Fusion & Thermonuclear Reactors.</p> <p>(4) Lasers & Frontier Physics. - Radiation Sources Driven by High-intensity Lasers. - <i>Lab. Visit 2a : AS CR – Inst. of Plasma Physics, Tokamak COMPASS. - Lab. Visit 2b : AS CR – Inst. of Plasma Physics, Laboratory PALS.</i></p> <p>(5) Exotic Matter Physics with ELI Beamlines.- Research and International Cooperation at the DPE FNSPE CTU. - Conclusion. - <i>Final Test.</i></p>
Prerequisites	A course of introductory / applied physics, basic knowledge of modern physics (e.g. Halliday et al.: Physics, Chap. 38 – 45).
Course exam	Final test
Publish on the web	<i>Course Web Site</i> http://vega.fjfi.cvut.cz/docs/athens13/
Session	November 2013