

## Research on Relativistic Mirrors at ELI Project

Petr Valenta

### Abstract:

In this talk, we overview different schemes of relativistic mirrors occurring in laser-plasma interaction and provide fundamental analytical calculations describing the properties of reflected radiation. We discuss the regimes of the interaction depending on the intensity of the incident laser pulse and find out a threshold for the laser energy below which the radiation is reflected coherently. Afterwards, we show results of our recent particle-in-cell simulations on relativistic flying mirrors using non-linear Langmuir waves and electron density singularities propagating in underdense plasmas. The results are compared to the analytical predictions and put in the context of laser based sources of coherent short-wavelength radiation. At the end of the talk, the European ELI project will be introduced as well as its current status and future plans.



### Biography:

P. Valenta is a researcher at the ELI Beamlines laser facility and a PhD student at the Czech Technical University in Prague, Czech Republic. He is a member of HiFI (High Field Initiative) project led by Prof. S. V. Bulanov, where he investigates sources of coherent short-wavelength radiation based on the concept of relativistic mirrors.