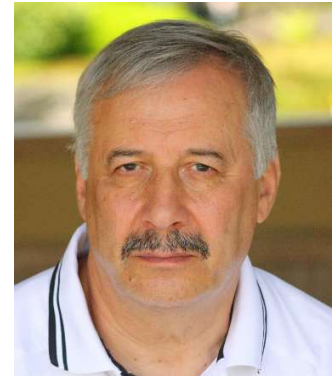


## **Electron Acceleration and Applications, Gamma-Ray Flash Theory, Relativistic Catoptrics Studies at the ELI-Beamlines**



S. V. Bulanov; [sergei.bulanov\\_at\\_eli-beams.eu](mailto:sergei.bulanov_at_eli-beams.eu)

ELI ERIC, ELI-Beamlines, Dolni Brezany, Czech Republic

### Abstract

We present several results obtained by our team recently as follows.

1. Highest energy LWFA electron beams ever produced at kHz regime at the ELI-Beamline.
2. Gamma-ray bursts are a phenomenon of wide interest, attracting the attention of researchers working in fields ranging from astrophysics to particle physics. Here we discuss several currently available theoretical schemes, including attosecond gamma-ray bursts and electron-positron pairs, all-optical nonlinear Breit-Wheeler electron-positron pair production using gamma-ray burst photons, and production of electron-positron pairs and radioactive nuclides by irradiating a high-Z target with a gamma-ray burst generated by an ultra-intense laser.
3. We discuss two paradoxes of special relativity related to relativistic flying mirrors.