Contribution ID: **136** Type: **Invited talk**

Laser-plasma acceleration for tomography and radiotherapy

Tuesday, 20 September 2022 17:20 (20 minutes)

Laser technology is evolving fast and high-power lasers needed for plasma acceleration are already available as commercial products, offered by several companies, and in compact setups suitable for space-limited environments in industrial or hospital settings. It is time to identify key areas where compact laser-plasma accelerators can have a scientific and/or societal impact. Here, two application-oriented activities pursued at Lund University will be presented.
Dose deposition and beam manipulation towards fractionated stereotactic high-energy radiotherapy is explored using magnetically focused, laser-accelerated electrons with energies up to 160 MeV. Such high-energy electrons can potentially produce a more favourable radiotherapy dose distribution compared to a state-of-the-art photon based radiotherapy technique.
X-rays from a laser-plasma accelerator is used to reveal the 3D structure of a highly atomising fuel injection spray. The technique allows for simultaneous optical fluorescence measurements, providing complementary information on the spray break-up. The results are very promising for the analysis of a variety of challenging transient spray systems, e.g., the injection of liquid synthetic and biofuels used for future clean-combustion applications.

Primary author: LUNDH, Olle (Lund University)

Presenter: LUNDH, Olle (Lund University)

Session Classification: Special Topic