

Plenarvortrag PV III Di 11:00 K.11.24 (HS 33)
Development of Laser-Driven High-Energy Particle and Radiation Sources — ●JÖRG SCHREIBER — Fakultät für Physik, Ludwig-Maximilians-Universität München, Am Coulombwall 1, 85748 Garching b. München — Max-Planck-Institut für Quantenoptik, Hans-Kopfermann-Straße 1, 85748 Garching b. München

Energetic particles are the basis for a large variety of applications in science and technology. The potential to accelerate particles with highly intense, ultrashort (femtosecond) laser pulses has been demonstrated experimentally in the past decade. This new technology is on the verge of becoming a viable experimental tool, with the prospect of realizing compact accelerators in the future.

The most intriguing feature of laser-driven sources is their short duration and their micrometer small source size (low longitudinal and transverse emittance), which is a direct consequence of the laser pulses at play. In addition, synchronism between various kinds of radiation (optical, UV/VUV, X-ray, particle) can enable novel time-resolved investigations. The talk will impart the most relevant underlying principles of laser acceleration and generation of radiation, supported by recent examples demonstrating the potential of laser-driven X-ray and ion pulses. I will highlight technological challenges and opportunities that arise from the specific nature of laser-driven sources which motivate our efforts to build the Center for Advanced Laser Applications (CALA) at the research campus in Garching.