EuCARD-2

Enhanced European Coordination for Accelerator Research & Development

Press article

Compact accelerators with plasmas and lasers

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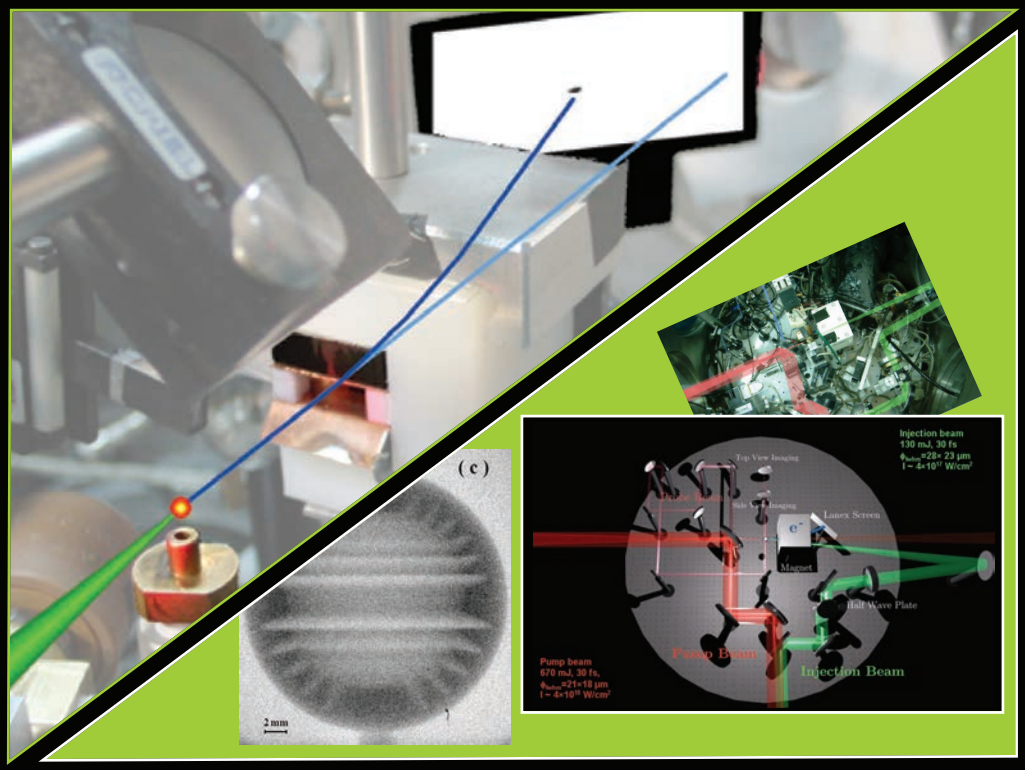
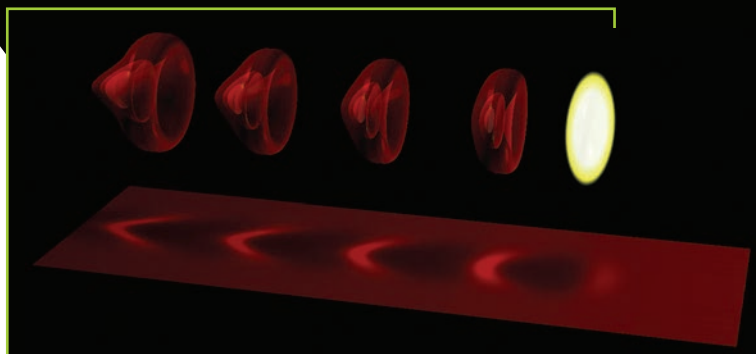
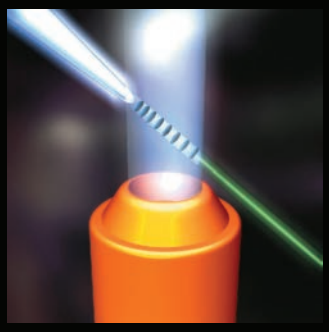


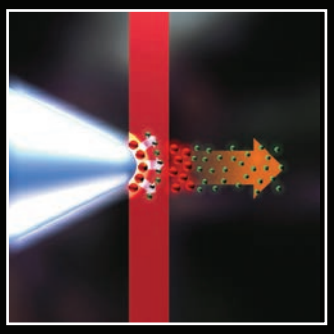
Compact accelerators with plasmas and lasers

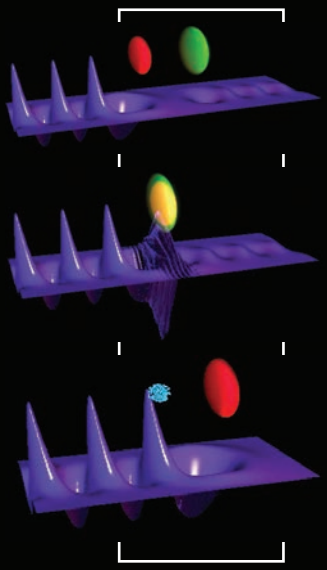
The SPL (Laser produced Particle Sources) group at LOA headed by Professor Victor Malka develops innovative approaches to produce compact accelerators with intense lasers. The related fundamental physics is the laser plasma interaction, and that is thanks to the continuing development of powerful laser systems extended to the relativistic domain. The incredible progress of laser plasma accelerators allow today's physicists to produce high quality beams of energetic radiation and particles. These beams have a number of interesting properties such as shortness, brightness and spatial quality, and could lend themselves to applications in many fields, including medicine (radiotherapy, proton therapy, imaging), radiobiology (short timescale, low dose irradiation), chemistry (radiolysis), physics and material science (radiography, electron and photon diffraction), security (material inspection), and of course for accelerator science. The use of compact and powerful lasers, with moderate costs and high repetition rate, has given rise to a new community. Consequently, this research field that has considerably grown in the past few years becomes more and more competitive.

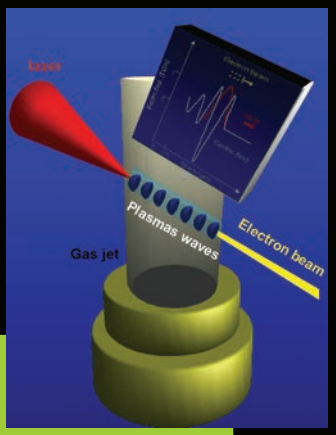


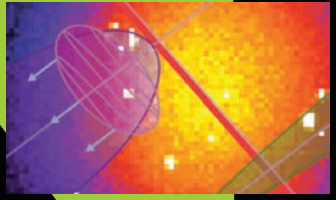
Laser pulse (in yellow) that propagates from left to right creates a plasma wave











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