

**FAKULTÄT für PHYSIK
LUDWIG-MAXIMILIANS-UNIVERSITÄT
MÜNCHEN/GARCHING**

**PHYSIK-DEPARTMENT
TECHNISCHE UNIVERSITÄT MÜNCHEN
MÜNCHEN/GARCHING**

MLL-KOLLOQUIUM

Donnerstag, 01.12.2011, 16¹⁵ Uhr

Hörsaal der LMU in Garching, Am Coulombwall 1
Treffen zum gemeinsamen Kaffee 16 Uhr

Prof. Ulrich Schramm

Helmholtz-Zentrum Dresden-Rossendorf/ TU Dresden

Dose Controlled Radiobiological Experiments with Ultra-short Pulse Laser Accelerated Proton Pulses

Over the last decade laser particle acceleration has made such progress that first applications in special fields can be envisioned. Prominent examples are radiation therapy with laser accelerated ion beams as well as the generation of pulsed X-ray sources. Here the demonstration of laser acceleration of proton pulses to maximum energies in the range of up to 20 MeV making use of the 100 TW table-top laser Draco installed at HZDR Dresden will be reported. Reproducible conditions over thousands of shots allowed for the first dose controlled irradiation of in vitro tumor cell samples, representing the first step towards radiobiological applications. A detailed description of experimental requirements as sufficiently high proton energies providing applicable doses of a few Gy within minutes, a beam transport and filtering system, an in-air irradiation site, a dedicated dosimetry system providing both online dose monitoring and a precise absolute dose information applied to the cell sample will be given.

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