

FAKULTÄT für PHYSIK
LUDWIG-MAXIMILIANS-UNIVERSITÄT
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT
TECHNISCHE UNIVERSITÄT MÜNCHEN
MÜNCHEN/GARCHING

MLL-KOLLOQUIUM

Donnerstag, 25.04.2013, 16¹⁵ Uhr

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

Dr. Ioachim Pupeza

(MPI f. Quantenoptik, Garching and MAP-Cluster)

Femtosecond Enhancement Cavities for High-Harmonic Generation

Over the past two decades, extreme-ultraviolet (XUV) pulses obtained via laser-driven high-harmonic generation (HHG) have emerged as a key experimental tool for the study and control of time-resolved electron motion in atoms, molecules and solids. The prospects offered by numerous potential applications in science and technology motivate significant effort in further increasing the repetition rate, the photon energy and the photon flux of HHG sources.

Among the approaches of driving HHG at multi-MHz repetition rates, coherently stacking pulses of a mode-locked laser in a passive enhancement cavity housing the HHG process seems to be most promising. Here, recycling the pulse after each pass through the nonlinear medium affords the necessary peak intensities for efficiently converting the available visible/infrared fundamental radiation to the XUV. The viability of this technique was recently confirmed by achieving record average powers for table-top coherent sources at photon energies up to 30 eV.

After reviewing the basics of cavity-enhanced HHG, this talk will concentrate on recent measures developed in our group allowing for extending this record to higher XUV photon energies.

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