MAX-BORN-INSTITUT FÜR NICHTLINEARE OPTIK UND KURZZEITSPEKTROSKOPIE IM FVB E.V.

Max-Born-Institut

Institutskolloquium

am Mittwoch, **10. November 2004 um 16:00 Uhr** spricht:

Prof. Dr. Thomas Baumert
Universität Kassel, Institut für Physik und CINSaT, FB Naturwissenschaften

über

"Ultrafast-Spectroscopy: Electrons, Atoms, Molecules and Plasmas"

The pillars of femtosecond spectroscopy are temporal resolution, coherence and intensity. Modern laser technology allows for full control over the electric field and sets the stage for many undreamed-of prospects for applications in physics, chemistry, biology and engineering. The main part of my talk will be devoted to a research field termed "Quantum Control" where we search for means to selectively steer quantum systems from an initial state |i> to any desired final state |f> with the help of suitably shaped light fields. I will focus on our latest experiments devoted to Quantum Control: in prototype experiments on atomic multi photon ionization we are exploring mechanisms beyond the perturbation regime that underlie quantum control with intense phase shaped laser pulses. The interference of free electron wave packets will be discussed in that context as well. We open a further level of control via an experiment on molecular multi photon ionization with adaptive polarization control. Here the vectorial aspects of light matter interaction are exploited.
If time permits I will highlight some recent results on the dynamics of femtosecond laser induced break down processes and introduce a new technique for in situ trace element analysis on biological systems with high spatial resolution..

Ort: Max-Born-Saal
MBI, Max-Born-Str. 2a

Interessenten sind herzlich eingeladen.

Prof. Dr. I. V. Hertel