SYPE 1 SYPE I

Zeit: Freitag 14:00–16:00 Raum: HU Senatssaal

Hauptvortrag SYPE 1.1 Fr 14:00 HU Senatssaal

ESCA-50 years after — •Svante Svensson — Uppsala Univ., Dept. of Physics, Box 530, SE-751 21 Uppsala, SWEDEN

A review of the first x-ray excited photoelectron spectroscopical experiments will be given. The chemical shift of core levels will be discussed with the vast fields of application. From these pioneering experiments an overview of the current research concerning the chemical shift of core electrons in molecules and in free clusters will be given. A special focus will be on the different effects that have to be disentagled in order to determine chemical shifts with ultra-high precision: Core hole dynamics, molecular field splitting and more subtle correlation effects.

Hauptvortrag SYPE 1.2 Fr 14:30 HU Senatssaal

Photoelektronenspektroskopie als Sonde der elektronischen Struktur von Festköpern und Oberflächen. — •Stefan Hüfner — Universität des Saarlandes, Saarbrücken

Die historische Entwicklung des Photoeffekts wird beschrieben, beginnend mit den ersten Arbeiten von Hertz und Hallwachs und deren Interpretation durch Einstein. Danach werden Beispiele für die auf diesem Effekt beruhende Meßtechnik, der Photoelektronen-Spektroskopie, gegeben. Diese kommen aus der Physik (Bandstrukturuntersuchungen) aber auch aus der Chemie (Chemische Verschiebung von Rumpfniveaus, ESCA). Schließlich werden neuere Entwicklungen beschrieben, die auf der hohen Impuls- und Energieauflösung dieser Technik beruhen: die Untersuchung von Oberflächzuständen, der Energielücke in konventionellen Supraleitern und der Temperaturabhängigkeit von Kondoresonanzen.

Hauptvortrag SYPE 1.3 Fr 15:00 HU Senatssaal

Imaging molecules with Angstrom-Attosecond precision — •Paul Corkum — National Research Council of Canada, Ottawa, Canada

Sub-femtosecond photon or electron pulses were both achieved within the past few years using "re-collision" photo-electrons — a technology that is radically different from all ultrafast technology that preceded it. The ability to make measurements in a new time regime will open new areas of science. In the case of attosecond pulses, one implication is the possibility of combining sub-Angstrom spatial resolution with sub-femtosecond temporal precision (Attoseconds & Angstroms). I will show how electrons and photons combine to image electronic orbitals of molecules. Time resolving an attosecond bound state electron wave packet is within reach.

Hauptvortrag SYPE 1.4 Fr 15:30 HU Senatssaal

The photoelectric effect of view body systems by one and many photons — •Reinhard Dörner[1], Thorsten Weber[1,2], Till Jahnke[1], Katharina Kreidi[1], Alexandra Knapp[1], Lothar Schmidt[1], Markus Schöffler[1], Andre Staudte[1], Matthias Weckenbrock[1], Matthias Smolarski[1], Horst Schmidt-Böcking[1], Paul B. Corkum[3], Dirk Zeidler[3], C.Lewis Cocke[4], Timur Osipov[2], Mike Prior[2], and Allen Landers[5] — [1]University Frankfurt — [2]LBNL, Berkeley, USA — [3]SIMS, Ottawa, Canada — [4]KSU, Manhattan, KS, USA — [5]Auburn University, Auburn, Al, USA

The coupling of one photon (synchrotron radiation) and many photons (short laser pulses) to view body systems often leads to complete fragmentation. Experimental techniques today allow to image the complete fragmentation process of the prototype systems Helium and H_2 in both, the single photon and multiphoton regime. These experiments illuminate the coupling mechanisms of light to matter in inprecedented detail.