Physikalisches Institut
Fakultät für Mathematik und Physik
Albert-Ludwigs-Universität Freiburg

IRTG-Seminar

Prof. Ruth Signorell

ETH Zürich

"Low-energy electron transport in water: Clusters, droplets, and liquid bulk"

Even though low-energy electron scattering in liquid water is of high relevance for the modelling of radiation damage processes, radiolysis, and the analysis of photoelectron spectra, detailed scattering data have so far neither been accessible by experiment nor by theory [1-4]. For lack of liquid water data, current descriptions thus use the amorphous ice data [5] and/or rescaled gas phase parameters to describe the scattering of **low-energy electrons (LEEs)** (< 50eV electron kinetic energy). The important parameters are the **multiple differential cross sections (MDCs)** with respect to electron kinetic energy, energy loss, and scattering angle, of all relevant scattering processes (elastic; inelastic (electron-phonon, electron-vibron, electron-electron)). Our recent derivation of MDCs for liquid water from photoelectron imaging of water droplets and water clusters provides a starting point for definite answers to fundamental questions regarding the electron dynamics in liquid water [6-8].

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[3] Y.-I. Suzuki, K. Nishizawa, N. Kurahashi, T. Suzuki, *Phys. Rev. E*, 90 (2014) 010302.
[4] H. Shinotsuka, B. da, S. Tanuma, H. Yoshikawa, C. J. Powell, D. R. Penn, *Surf. Interf Anal.* 49 (2017) 238.
[5] M. Michaud, A. Wen, L. Sanche, *Radiat. Res.*, 159 (2003) 3.
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Tuesday, November 28, 2017, 6:00 p.m., HS II,
Physics high rise, Hermann-Herder-Str. 3

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