PAUL SCHERRER INSTITUT

PSI facilities newsletter

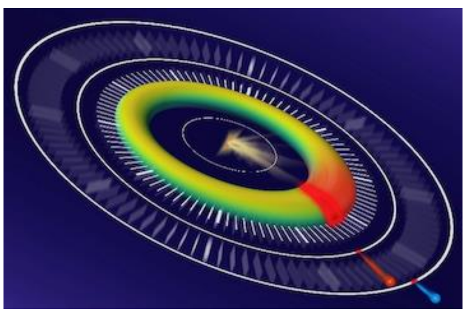
https://www.psi.ch/science/facility-newsletter

Kinematics governing mechanotransduction in the Venus flytrap

For insects, touching the sensory hairs of a *Venus flytrap* is famously dangerous. Recent work established that already a single touch can provide sufficient mechanical stimulation to evoke an electrical response in the sensory cells near the base of the hair, which in turn triggers trap closure. It remained unclear, however, how the deflection of sensory hairs is kinematically linked to the deformation of sensory cells. An interdisciplinary team now developed a 3D multi-scale computational model, based on µCT images obtained at the TOMCAT beamline. Exploring the model, they found that the highest cell-wall stretch is produced not where they expected. Instead, the flytrap seems to have developed an optimized cell morphology to transduce the mechanical stimulus into 'hotspots' of particularly high sensitivity.

***E. Saikia et al.,** International Journal of Molecular Sciences **22**, 280 (2021) / DOI: 10.3390/ijms22010280*

Clocking Auger electrons



A major obstacle to exploiting the uniquely intense short pulses provided by XFELs has been the difficulty to synchronise them with the external laser pulses needed to trigger electron dynamics in matter. To overcome this limitation, an international team including SwissFEL researchers developed a method termed 'self-referenced attosecond streaking' and demonstrated it at the Linac Coherent Light Source (US) to measure the few-femtosecond Auger decay lifetime in neon gas. Their approach is based on established methods from optical laser spectroscopy, but crucially does not rely on precise synchronisation between two light pulses. Instead, a large number of individual measurements are combined to identify global trends.

Read the full story: https://www.psi.ch/en/lno/scientific-highlights/clocking-the-movement-of-electrons-inside-an-atom-0

D.C. Haynes et al., *Nature Physics, 18 January 2021 (online)* / DOI: 10.1038/s41567-020-01111-0

CALIPSOPLUS Access for SMEs

The current call is open from September 01, 2020 – June 30, 2021

CALIPSOplus, a European Horizon2020 funded research and innovation program, provides access support for SMEs to light sources. The access is based on a specific review system for SMEs in parallel to the established academic access route but following the same principles. The proposal confidentiality is kept during the whole process. If the proposal is accepted, the SME will have access to the requested light sources and the experiments will be financially supported through CALIPSOplus.

Get more information: http://www.wayforlight.eu/en/industries/sme-access-proposal/.

For industry use, SLS and SwissFEL offer direct access through the proprietary route, as well.
Read more: https://synchrotron-analysis.ch/.