O 2: Key Note I

Time: Monday 10:00–10:30 Location: R1

Plenary Talk O 2.1 Mon 10:00 R1

Chasing excited electrons in energy, momentum space, and time — •Martin Aeschlimann — University of Kaiserslautern (TUK) and Research Center OPTIMAS, Erwin-Schroedinger-Str. 46, 67663 Kaiserslautern, Germany

Optically excited (hot) electrons play a crucial role for many fundamental chemical and physical processes occurring at surfaces, interfaces, and in bulk materials. Despite decades of intense research, however, a complete picture of the hot electrons dynamic in its collective environment is still elusive. In this presentation, I will demonstrate how the latest developments in ultrafast light sources and photoemission detector technology have paved the way towards a completely new generation of time-resolved photoemission experiment based on time-, (and spin-) resolved momentum microscopy [1,2]. With this tool at hand, we can directly watch the temporal evolution of excited carriers in energy, momentum space, and time, which provides an unprecedented view onto the fundamental energy-, and (angular-) momentum-dissipation mechanisms in condensed matter. As exemplary cases, I will focus on the excited state dynamics of low dimensional materials and metal-molecular hybrid systems [3].

[1] B. Yan et al; Nature Communications 6, 10167 (2015)
[2] F. Haag et al, Rev. Sci. Instrum., 90 ,103104 (2019)
[3] F. Haag et al, arXiv:2101.03567 (2020)