O 3: Overview Talk Kerstin Volz

Time: Monday 9:30–10:15 Location: H24

Topical Talk O 3.1 Mon 9:30 H24

Insights in real and electronic structure of interfaces by electron microscopy — •Kerstin Volz — Philipps-Universität Marburg, Center for Quantum Materials and Sustainable Technology (mar.quest) and Department of Physics, Hans Meerwein Str., 35032 Marburg, Germany

Internal interfaces between materials are decisive for the functionality of many devices. Hence, an understanding of the atomic as well as electronic structure across interfaces is essential. Electron microscopy can give insights into these properties from Angstrom to several micrometer length scales. With examples from semiconductors, batteries and 2D materials I will show, how Scanning Transmission Electron Microscopy (STEM) can be used to gain the desired information. Thereby, a focus will be on state of the art and quantitative techniques like 4-dimensional STEM, where real as well as momentum space are mapped to derive information on composition, but also on electric fields. These properties will be correlated to fundamental excitations of the charge carrier system at interfaces, e.g., excitons, probed by monochromated Electron Energy Loss Spectroscopy (EELS).