Seminar/Talk

Nice to meet you, I am an ultrafast electron microscopist!

Beatrice Ferrari

Host: Charles Roques-Carmes

You can also attend the talk via Zoom. In this seminar, I will share my journey in femtosecond-time-resolved electron microscopy, beginning with the development of a custom ultrafast TEM as the first PhD student in Prof. Vanacore's group at UniMiB (Milan). This project integrated a photonic-based electron modulator, enabling pre-sample electron beam shaping using light. Shaped electron beams could open up new possibilities for ultrafast TEMs: they could be used to selectively probe low-frequency excitations in materials, to enable low-dose imaging of sensitive scatterers, to enhance image resolution and to increase contrast. Currently, I am doing part of my PhD at EPFL (Lausanne), in a more standard ultrafast TEM laboratory. Here, my focus is on studying the phononic response to optical excitation of charge carriers in quasicrystalline, 30° twisted bilayer graphene. Using time-resolved electron energy-loss spectroscopy, we investigate changes in the electronic response of the material which reveal the phonon dynamics. As I am considering the possibility of joining ISTA as a postdoctoral researcher, the purpose of this seminar is not only to share my work but also to introduce myself to your community. Expect a mix of science and personal anecdotes as I share the challenges and triumphs of navigating the frontiers of ultrafast science. I am looking forward to meet you and I hope this talk sparks engaging discussions. Useful resources:https://luminad.mater.unimib.it/home-pagehttps://www.smartelectron.euAhn, S. J., Moon, P., Kim, T. H., Kim, H. W., Shin, H. C., Kim, E. H., ... & Ahn, J. R. (2018). Dirac electrons in a dodecagonal graphene quasicrystal. Science, 361(6404), 782-786. Bio:Beatrice Ferrari graduated from the University of Milano-Bicocca with a degree in Solid State Physics. For her master's thesis, she joined Giordano Scappucci's group at TU Delft, where she conducted magnetotransport characterization of a germanium double-quantum well field-effect transistor.Currently a PhD student in Prof. Gianmaria Vanacore's group at the University of Milano-Bicocca, Beatrice has been instrumental in establishing his femtosecond time-resolved transmission electron microscopy (TEM) laboratory, also known as ultrafast TEM (UTEM). As part of her doctoral studies, she is currently working at EPFL in Prof. Fabrizio Carbone's UTEM laboratory in Lausanne.In science and beyond, Beatrice is passionate about bringing people together to climb mountains and tackle challenges that would be scary alone.

Thursday, January 30, 2025 03:00pm - 04:00pm

Mondi 2 & Zoom

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.