

Computational Microscopy Tutorials

Tuesday September 13, 2022

- 8:00–9:00 *Check-In/Breakfast (Hosted by IPAM)*
- 9:00–10:15 **Jianwei (John) Miao** (University of California, Los Angeles (UCLA))
Coherent Diffractive Imaging: A Unification of Microscopy, Diffraction and Computation
- 10:15–10:45 *Break*
- 10:45–12:00 **Peter Binev** (University of South Carolina)
Modeling in Electron Microscopy
- 12:00–12:30 *Core Orientation with IPAM Staff*
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:15 **Deanna Needell** (University of California, Los Angeles (UCLA))
Using Algebraic Factorizations for Interpretable Learning
- 3:15–3:45 *Break*
- 3:45–5:00 **Mahdi Soltanolkotabi** (University of Southern California (USC))
Machine Learning and Computational Imaging

Wednesday September 14, 2022

- 8:00–9:00 *Check-In/Breakfast (Hosted by IPAM)*
- 9:00–10:15 **Angus Kirkland** (University of Oxford)
Making every electron count: Strategies for quantitative imaging and reconstruction from high speed and low noise data
- 10:15–10:45 *Break*
- 10:45–12:00 **Stanley Osher** (University of California, Los Angeles (UCLA))
Variational Methods for Computational Microscopy
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:15 **Alessandro Foi** (Tampere University)
Modeling and removal of noise using nonlocal patch-based collaborative filters, with applications to direct and inverse imaging
- 3:15–3:45 *Break*
- 3:45–5:00 **Paul Voyles** (University of Wisconsin-Madison)
From Data to Information to Knowledge: Problems in Materials Microscopy with Computational Solutions?



Thursday September 15, 2022

- 8:00–9:00 *Check-In/Breakfast (Hosted by IPAM)*
- 9:00–10:15 **Hong Zhou** (University of California, Los Angeles (UCLA))
New cryoEM Programs for Studying Native Biological Complexes, in situ and in Action
- 10:15–10:45 *Break*
- 10:45–12:00 **Peter Binev** (University of South Carolina)
Learning Theory and Computational Microscopy
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:15 **Jerome Darbon** (Brown University)
Efficient algorithms for Non-Local Filtering and applications to Cryo-Electron microscopy and biological microscopy
- 3:15–3:45 *Break*
- 3:45–5:00 **Paul Weiss** (University of California, Los Angeles (UCLA))
Leveraging Sparsity in Scanning Probe Microscopy

Friday September 16, 2022

- 8:00–9:00 *Check-In/Breakfast (Hosted by IPAM)*
- 9:00–10:15 **Benjamin Berkels** (RWTH Aachen University)
An introduction to variational image processing
- 10:15–10:45 *Break*
- 10:45–12:00 **Jianwei (John) Miao** (University of California, Los Angeles (UCLA))
Capturing the 3D Atomic Structure of Non-Crystalline Materials
- 12:00–2:00 *Lunch (on your own)*
- 2:00–5:00 *Focus Group Discussion*

