

# Q-SORT

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## 2021 International Conference 1-3 September 2021

### SCIENCE AND APPLICATIONS OF COHERENT ELECTRON BEAM MANIPULATION

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Horizon 2020 Framework Programme Projects: 766970 – Q-SORT | 101035013 - MINEON | 964591- SMART ELECTRON

1 September 2021 ZOOM H.13:40 - 19:00		
13:40 -14:00		<i>Welcome addresses</i> Vincenzo Grillo (National Research Council, Italy)
<b>Session A:</b> Phase and field holography <b>Chair:</b> David Cooper (Université Grenoble Alpes, CEA, France)		
14:00 -14:30	<b>A1</b>	<i>Novel developments in 2D and 3D Electron Off-axis Electron Holography</i> Alex Lubk (IFW Dresden, Germany)
14:30 -15:00	<b>A2</b>	<i>Developments for operando electrical measurements in off-axis electron holography</i> Christoph Gatel (CEMES-CNRS, France)
15:00 -15:30	<b>A3</b>	Phase anti-matching and other semi-crazy ideas Marco Beleggia (Technical University of Denmark, Denmark)
<b>Session B:</b> Ptychography & 4DSTEM <b>Chair:</b> David Cooper (Université Grenoble Alpes, CEA, France)		
15:30 -16:00	<b>B1</b>	<i>Ptychography &amp; 4D-STEM: Solutions to a big-data problem</i> Christoph Koch (Humboldt-Universität, Germany)
16:00 -16:30	<b>B2</b>	<i>Field mapping by off-axis electron holography and pixelated STEM</i> Victor Boureau (EPFL, Switzerland)
16:30 -17:00		Coffee Break

<b>Session C - New Magnetic Measurement Ideas</b>		
<b>Chair:</b> Rafal Dunin-Borkowski (Forschungszentrum Jülich, Germany)		
17:00 -17:30	<b>C1</b>	<i>Advances in the generation and measurement of structured electromagnetic fields in the transmission electron microscope</i> Amir Tavabi (Forschungszentrum Jülich, Germany)
17:30 -18:00	<b>C2</b>	<i>Imaging of complex magnetic textures with particle-like properties</i> Nikolai Kiselev (Forschungszentrum Jülich, Germany)
18:00 -18:30	<b>C3</b>	<i>Ultrafast spectroscopy from fundamental concepts to applications in magnetism</i> Theo Rasing (Radboud University, Netherlands)
<b>2 September 2021</b> <b>ZOOM</b> <b>H.11:00 - 18:30</b>		
11:00 -12:15		11:00 Free DISCUSSION-CHAT
12:15 -14:00	Lunch break	
<b>Session D: Phase and field holography</b>		
<b>Chair:</b> Rafal Dunin-Borkowski (Forschungszentrum Jülich, Germany)		
14:00 -14:30	<b>D1</b>	<i>Off-axis electron holography and Lorentz microscopy of magnetic skyrmion bubbles in multilayers and van der Waals materials</i> Thibaud Denneulin (Forschungszentrum Jülich, Germany)
<b>Session E: Ptychography &amp; 4D-STEM</b>		
<b>Chair:</b>		
14:30 -15:00	<b>E1</b>	<i>Segmented- and pixelated-detector differential phase contrast imaging of the iron-rhodium magnetostructural transition</i> Trevor Almeida (Université Grenoble Alpes, CEA, France)
15:00 -15:30	<b>E2</b>	<i>Phase Retrieval by Electron Ptychography</i> David Muller (Cornell University, USA)
15:30-16:00	Coffee Break	
<b>Session F: Electron Beam Shaping</b>		
<b>Chair:</b> Stefano Frabboni (Università di Modena e Reggio Emilia, Italy)		
16:00 -16:30	<b>F1</b>	<i>Electron Energy Loss Spectroscopy with an Orbital Angular Momentum sorter: results and challenges</i> Enzo Rotunno (National Research Council, Italy)
16:30 -17:00	<b>F2</b>	<i>Optical polarization analogue in free electrons beam</i> M. Kociak (Paris Sud, France)

17:00 -17:30	<b>F3</b>	<i>Electron beam aberration correction and shaping using optical fields</i> Andrea Konecna (ICFO-ICFO-Institut de Ciencies Fotoniques, Spain)
17:30 -18:00	<b>F4</b>	<i>Recent results in 3D wavefront modulation and quantum mechanical detection</i> , Tatiana Latychevskaia (Paul Scherrer Institute, Switzerland)
18:00 -18:30	<b>F5</b>	<i>Structured Electron Beams for Interaction-free Measurements and Inelastic Interferometry</i> Benjamin Mc Morran (University of Oregon, USA)
<b>3 September 2021</b> <b>ZOOM</b> <b>H.11:00 - 19:00</b>		
11:00 -12:15	Free DISCUSSION-CHAT	
12:15 -14:00	Lunch break	
<b>Session G: Electron-radiation interaction</b> <b>Chair: Vincenzo Grillo (National Research Council, Italy)</b>		
14:00 -14:30	<b>G1</b>	<i>Engineering the wavefunction of electrons for new microscopy methods</i> Fabrizio Carbone (EPFL, Switzerland)
14:30 -15:00	<b>G2</b>	<i>Homodyne detection of cathodoluminescence</i> Ofer Kfir (University of Tel Aviv, Israel)
15:00 -15:30	<b>G3</b>	<i>Complex phase space manipulation of pulsed electron beams in a nanophotonic structure</i> Peter Hommelhoff (Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany)
15:30 -16:00	<b>G4</b>	<i>Tunable Photo-Induced Free-Electron Spatial Modulation</i> Shai Tseses (Technion, Israel)
16:00 -17:00	<b>G5</b>	<i>Smart Ghost Imaging</i> Ebrahim Karimi (University of Ottawa, Canada)
17:00 -17:30	Coffee Break	
<b>Session H: Ideas and projects</b> <b>Chair: Ido Kaminer (Technion, Israel)</b>		
17:30 -18:00	<b>H1</b>	<i>Towards quantum electron wavepacket spectroscopy in the SEM</i> Albert Polman (NWO-Institute AMOLF)
18:00 -18:30	<b>H2</b>	<i>SMART-electron: Dynamically modulating electrons' wave properties opening new frontiers in electron microscopy</i> Gianmaria Vanacore (University of Milano-Bicocca, Italy)

18:30 -19:00	<b>H3</b>	<i>A Few New Ideas for Future Directions in Microscopy</i> Vincenzo Grillo (National Research Council, Italy)
19:00	Wrap-up	