

# The Inaugural Workshop on the Trends in Quantum Matter



426 Nieuwland Science Hall

May 18 & 19, 2023

Workshop Organizers:

Laszlo Forro & Boldizsar Janko & Dafei Jin

Event Manager:

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Date / Time	May 18, 2023	May 19, 2023
08:00am – 09:00am	Breakfast	Breakfast
09:00am – 09:30am	<i>Welcome Speech</i> <b>Santiago Schnell</b> (College Dean) <b>Morten Eskildsen</b> (Department Chair) <b>Laszlo Forro</b> (Center Director)	<b>Andrew Briggs</b> University of Oxford
09:30am – 10:00am	<b>Peter Littlewood</b> University of Chicago	<b>Adam Gali</b> Wigner Research Institute, Budapest
10:00am – 10:30am	<b>Tony Heinz</b> Stanford University	<b>Karoly Holczer</b> UCLA
10:30am – 11:00am	Coffee Break	Coffee Break
11:00am – 11:30am	<b>Kin Fai Mak</b> Cornell University	<b>Gergely Zimanyi</b> UC Davis
11:30am – 12:00pm	<b>Jie Shan</b> Cornell University	<b>Michael Norman</b> Argonne National Laboratory
12:00pm – 12:30pm	<b>Walter de Heer</b> Georgia Tech	<i>Quantum Center Faculty Talks</i> <b>Petr Stepanov</b> <b>Dafei Jin</b> University of Notre Dame
12:30pm – 02:15pm	Lunch and Group Photo	Concluding Remarks and Lunch
02:15pm – 03:00pm	<i>Nobel Laureate Special Talk</i> <b>Anthony Leggett</b> UIUC	
03:00pm – 03:30pm	<b>Ivan Bozovic</b> Brookhaven National Laboratory	
03:30pm – 04:00pm	<b>Neven Barisic</b> TU Vienna	
04:00pm – 04:30pm	Coffee Break	
04:30pm – 05:00pm	<b>Henrik Ronnow</b> EPFL	
05:00pm – 05:30pm	<b>Ranga Dias</b> University of Rochester	
05:30pm – 06:00pm	<i>Quantum Center Faculty Talks</i> <b>Edwin Huang</b> <b>Xiaolong Liu</b> University of Notre Dame	
06:00pm – 08:00pm	Dinner	

*Invited Topical Talks:* 25min speech + 5min Q&A

*Nobel Laureate Special Talk:* 40min speech + 5min Q&A

*Quantum Center Faculty Talks:* 12min speech + 3min Q&A

See talk titles and detailed agenda in the next page ➡

### Morning Session on May 18, 2023

Session Chair: Boldizar Janko

- 08:00am – 09:00am Breakfast at the Quantum Center (the 4th floor of Nieuwland Science Hall)  
09:00am – 09:30am **Santiago Schnell, Morten Eskildsen, Laszlo Forro**  
*Welcome Speech*
- 09:30am – 10:00am **Peter Littlewood**, University of Chicago  
*The quantum critical point in SrTiO<sub>3</sub>*
- 10:00am – 10:30am **Tony Heinz**, Stanford University  
*Imaging excitons in momentum space*
- 10:30am – 11:00am Coffee Break
- 11:00am – 11:30am **Kin Fai Mak**, Cornell University  
*Fractional Chern insulators in semiconductor moiré materials*
- 11:30am – 12:00pm **Jie Shan**, Cornell University  
*Emergence of heavy fermions in a Moiré Kondo lattice*
- 12:00pm – 12:30pm **Walter de Heer**, Georgia Tech  
*Exceptional transport in the epitaxial graphene edge state*
- 12:30pm – 02:15pm Lunch at Hurley Hall and Group Photo in front of Nieuwland Science Hall

### Afternoon Session on May 18, 2023

Session Chair: Laszlo Forro

- 02:15pm – 03:00pm **Anthony Leggett**, UIUC  
*Some remarks on the present and possible future of condensed matter physics*
- 03:00pm – 03:30pm **Ivan Bozovic**, Brookhaven National Laboratory  
*Alchemy of the 21st century: digital synthesis of quantum materials*
- 03:30pm – 04:00pm **Neven Barisic**, TU Vienna  
*High-T<sub>c</sub> cuprates – story of two electronic subsystems*
- 04:00pm – 04:30pm Coffee Break
- 04:30pm – 05:00pm **Henrik Ronnow**, EPFL  
*SrCu<sub>2</sub>(BO<sub>3</sub>)<sub>2</sub> under extreme conditions – a fruit fly for quantum many-body physics*
- 05:00pm – 05:30pm **Ranga Dias**, University of Rochester  
*Towards ambient superconductivity*
- 05:30pm – 05:45pm **Edwin Huang**, UIUC & University of Notre Dame  
*Fluctuating intertwined stripes in the strange metal regime of the Hubbard model*
- 05:45pm – 06:00pm **Xiaolong Liu**, University of Notre Dame  
*Atomic scale imaging using superconductive scanning probes*
- 06:00pm – 08:00pm Dinner at Eck Visitors Center

### Morning Session on May 19, 2023

Session Chair: Dafei Jin

- 08:00am – 09:00am Breakfast at the Quantum Center (the 4th floor of Nieuwland Science Hall)
- 09:00am – 09:30am **Andrew Briggs**, University of Oxford  
*Accelerating quantum technologies through machine learning*
- 09:30am – 10:00am **Adam Gali**, Wigner Research Institute, Budapest  
*Control of near-surface nitrogen-vacancy quantum sensor in diamond*
- 10:00am – 10:30am **Karoly Holczer**, UCLA  
*What can quantum technology do for health care*
- 10:30am – 11:00am Coffee Break
- 11:00am – 11:30am **Gergely Zimanyi**, UC Davis  
*Condensed matter physics in the service of renewable energy revolution*
- 11:30am – 12:00pm **Michael Norman**, Argonne National Laboratory  
*Superconductivity in KTaO<sub>3</sub> – the new kid on the oxide electronics block*
- 12:00pm – 12:15pm **Petr Stepanov**, University of Notre Dame  
*Cryogenic near-field imaging in Moiré materials*
- 12:15pm – 12:30pm **Dafei Jin**, University of Notre Dame  
*Single electrons on solid neon – a new solid-state qubit platform*
- 12:30pm – 02:15pm Concluding Remarks and Lunch at Hurley Hall