

## Tensor Methods and Emerging Applications to the Physical and Data Sciences Tutorials

### Tuesday March 9, 2021

- 7:55      *Session Chair: M. Alex O. Vasilescu*
- 7:55–8:00    *Welcome & Opening Remarks: Dean Miguel García-Garibay (Dean of Physical Sciences, UCLA) and Dima Shlyakhtenko (Director, IPAM)*
- 8:00–9:15    **Ming Yuan** (Columbia University)  
*Low Rank Tensor Methods in High Dimensional Data Analysis Part 1*
- 9:25–9:45    *Break*
- 9:45–11:00   **Anna Seigal** (University of Oxford)  
*From Linear Algebra to Multi-Linear Algebra*

### Wednesday March 10, 2021

- 8:00      *Session Chair: Jianfeng Lu*
- 8:00–9:15    **Thomas Barthel** (Duke University)  
*An Introduction to Tensor-Network Simulations of Quantum Many-Body Systems Part 1*
- 9:25–9:45    *Break*
- 9:45–11:00   **David Gross** (Universität zu Köln)  
*The Stabilizer Formalism and Quantum Error Correction Through the Lens of Tensors Part 1*

### Thursday March 11, 2021

- 8:00      *Session Chair: Joseph Landsberg*
- 8:00–9:15    **Lek-Heng Lim** (University of Chicago)  
*What is a tensor? Part 1*
- 9:25–9:45    *Break*
- 9:45–11:00   **M. Alex O. Vasilescu** (University of California, Los Angeles (UCLA))  
*Forward and Inverse Causal Inference with Multilinear (Tensor) Factor Analysis*



## Friday March 12, 2021

- 8:00 *Session Chair: Alessandra Bernardi*
- 8:00–9:15 **Joseph Landsberg** (Texas A&M University - College Station)  
*Introduction to the Geometry of Tensors Part 1*
- 9:25–9:45 *Break*
- 9:45–11:00 **Ming Yuan** (Columbia University)  
*Low Rank Tensor Methods in High Dimensional Data Analysis Part 2*

## Monday March 15, 2021

- 8:00 *Session Chair: Gero Friesecke*
- 8:00–9:15 **Thomas Barthel** (Duke University)  
*An Introduction to Tensor-Network Simulations of Quantum Many-Body Systems Part 2*
- 9:25–9:45 *Break*
- 9:45–11:00 **Frank Verstraete** (Ghent University)  
*Mathematical Aspects of Tensor Networks Part 1*

## Tuesday March 16, 2021

- 8:00 *Session Chair: Miguel Velez Reyes*
- 8:00–9:15 **Ankur Moitra** (Massachusetts Institute of Technology)  
*Tensor Decompositions and their Applications Part 1*
- 9:25–9:45 *Break*
- 9:45–11:00 **M. Alex O. Vasilescu** (University of California, Los Angeles (UCLA))  
*Generalized Block Multilinear Factor Analysis: Representing Parts and Wholes with Hierarchical Block Tensors*

## Wednesday March 17, 2021

- 8:00 *Session Chair: Lieven De Lathauwer*
- 8:00–9:15 **Lek-Heng Lim** (University of Chicago)  
*What is a tensor? Part 2*
- 9:25–9:45 *Break*

*(Wednesday schedule continued on next page)*

*(Wednesday schedule continued from previous page)*

9:45–11:00 **Anna Seigal** (University of Oxford)  
*Tensors in Statistics and Data Analysis*

### Thursday March 18, 2021

8:00 *Session Chair: Giorgio Ottaviani*

8:00–9:15 **David Gross** (Universität zu Köln)  
*The Stabilizer Formalism and Quantum Error Correction Through the Lens of Tensors Part 2*

9:25–9:45 *Break*

9:45–11:00 **Joseph Landsberg** (Texas A&M University - College Station)  
*Introduction to the Geometry of Tensors Part 2*

### Friday March 19, 2021

8:00 *Session Chair: Anna Seigal*

8:00–9:15 **Frank Verstraete** (Ghent University)  
*Mathematical Aspects of Tensor Networks Part 2*

9:25–9:45 *Break*

9:45–11:00 **Ankur Moitra** (Massachusetts Institute of Technology)  
*Tensor Decompositions and their Applications Part 2*

