

Workshop on
“Large-N Matrix Models and Emergent Geometry”

September 4 - 8, 2023

organized by

Sumit Ranjan Das (U Kentucky), Masanori Hanada (QMU London), Sean Hartnoll (U Cambridge), Antal Jevicki (Brown U, Providence), Joanna Karczmarek (UBC), Harold Steinacker (U of Vienna)

• **Monday, September 4th, 2023**

09:00 – 09:30 **Registration and Welcome**

09:30 – 10:20 **Alexander Frenkel (Stanford U)**

Entanglement in Matrix Quantum Mechanics

10:30 – 11:00 **Coffee break**

11:00 – 11:40 **David Berenstein (UC, Santa Barbara)**

Strings, Young diagrams and all that.

11:50 – 14:00 **Lunch break**

14:00 – 14:40 **Gautam Mandal**

A fresh look at the large N limit of matrix models and holography

14:45 – 15:25 **Sumit Ranjan Das (U Kentucky)**

Entanglement of Internal Degrees of Freedom and Holography

15:30 – 16:00 **Coffee break**

16:00 – 16:40 **Sanjaye Ramgoolam (QMU London)**

Classical identification of emergent geometries in AdS spacetimes and quantum algorithms for algebras in dual CFTs.

• **Tuesday, September 5th, 2023**

09:30 – 10:20 **Henry Lin (Stanford U)**

Review of the large N matrix bootstrap

10:30 – 11:00 **Coffee break**

11:00 – 11:40 **Masanori Hanada**

Recent numerical results on D0-brane matrix model

11:50 – 14:00 **Lunch break**

14:00 – 14:40 **Asato Tsuchiya (SU)**

Renormalization group and quantum error correction

14:45 – 15:25 **Denjoe O'Connor (DIAS)**

Trace Relations and Matrix Models

15:30 – 16:00 **Coffee break**

16:00 – 16:40 **Adam Tropper (Harvard U, Cambridge)**

New Symmetries in Old Matrix Models

16:45 – 17:25 **Antal Jevicki**

Symmetries and Hilbert Space at Large N

- **Wednesday, September 6th, 2023**

09:30 – 10:20 **Robert de Mello Koch (Huzhou U.)**

Microscopic Entanglement Wedges from Bilocal Holography

10:30 – 11:00 **Coffee break**

11:00 – 11:40 **Joao Rodrigues (University of Witwatersrand)**

Large N Master Field Optimization for Multi-Matrix Systems

11:45 – 12:25 **Johanna Erdmenger (U Würzburg)**

Discrete Holography

12:30 – 13:00 **Samuel Kovacik (Comenius U, Bratislava)**

The Fuzzy Onion

13:00 – 19:00 **free afternoon**

19:00 – 21:00 **Conference dinner (Heuriger)**

- **Thursday, September 7th, 2023**

09:30 – 10:20 **Jun Nishimura (KEK)**

Lorentzian IKKT matrix model with the mass term as a nonperturbative formulation of superstring theory

10:30 – 11:00 **Coffee break**

11:00 – 11:40 **Konstantinos Anagnostopoulos (National and Technical U of Athens)**

Recent progress in the numerical studies of the Lorentzian IKKT model

11:50 – 14:00 **Lunch break**

14:00 – 14:30 **Yuhma Asano (University of Tsukuba)**

Perturbative superstring theory and the IKKT matrix model

14:35 – 15:15 **Harold Steinacker (U of Vienna)**

3+1-dimensional gravity as a quantum effect in the IKKT model

15:20 – 15:50 **Coffee break**

15:50 – 16:20 **Tung Tran (U Mons)**

(Quasi-)chiral higher-spin theories from twistor space

- **Friday, September 8th, 2023**

09:30 – 10:10 **Hikaru Kawai (National Taiwan University)**

Quantum Phase Transition and Naturalness in Generalized Effective Action

10:20 – 11:00 **Coffee break**

11:00 – 11:40 **Robert Brandenberger (McGill U)**

Emergent Metric Space-Time and Early Universe Cosmology from the BFSS Matrix Model

11:50 – 14:00 **Lunch break**

14:00 – 14:30 **Suddhasattwa Brahma (U Edinburgh)**

Emergent Matrix Cosmology

14:45 – 15:45 **Discussions and short unscheduled contributions**

16:00 – **Coffee break and farewell**

All talks take place at ESI Boltzmann Lecture Hall!