

Gauge Workshop Munich 2022

Monday, May 9, 2022 - Friday, May 13, 2022

**Max Planck Institute of Quantum Optics
Program**

Monday, May 9, 2022

From Spin Liquids to non-Abelions in Synthetic Quantum Systems (9:30 AM - 10:10 AM)

- Presenter: VISHWANATH, Ashvin

Strategies for simulating gauge theories with NISQ machines (10:10 AM - 10:50 AM)

- Presenter: CELLI, Alessio

Initializing the ground state of lattice gauge theories with the quantum approximate optimization algorithm (11:20 AM - 12:00 PM)

- Presenter: BURRELLO, Michele

Hardware efficient quantum simulation of non-abelian gauge theories with qudits on Rydberg platforms (12:00 PM - 12:40 PM)

- Presenter: ZACHE, Torsten

Fifty years of Ising lattice gauge theory (3:00 PM - 3:40 PM)

- Presenter: WEGNER, Franz

Z₂ gauge theory: self-duality, criticality, and emergent order parameters (4:00 PM - 4:40 PM)

- Presenter: NAHUM, Adam

Simulatable models of Quantum Criticality in Heavy Fermion Systems (4:40 PM - 5:20 PM)

- Presenter: GROVER, Tarun

Tuesday, May 10, 2022

DYNAMITE: Next Generation Quantum Simulators: From DYNAMIcal Gauge Fields to Lattice Gauge ThEory

(9:30 AM - 10:10 AM)

- Presenter: LEWENSTEIN, Maciej

Quantum simulation of Z2 lattice gauge theory with dynamical matter (10:10 AM - 10:50 AM)

- Presenter: GRUSDT, Fabian

Insight on gauge theories from MPS (11:20 AM - 12:00 PM)

- Presenter: TAGLIACOZZO, Luca

Tuning the Topological θ -Angle in Cold-Atom Quantum Simulators of Gauge Theories (12:00 PM - 12:40 PM)

- Presenter: HALIMEH, Jad

Qubit Regularization, Qubit Embedding Algebra and Asymptotic Freedom (3:00 PM - 3:40 PM)

- Presenter: CHANDRASEKHARAN, Shailesh

TBA (4:00 PM - 4:40 PM)

- Presenter: BERMUDEZ, Alejandro

Theory of Oblique Topological Insulators (4:40 PM - 5:20 PM)

- Presenter: FRADKIN, Eduardo

Wednesday, May 11, 2022

Probing confinement in a Z2 lattice gauge theory on a Sycamore chip (9:30 AM - 10:10 AM)

- Presenter: HAUKE, Philipp

Hyperbolic band theory (10:10 AM - 10:50 AM)

- Presenter: MACIEJKO, Joseph

TBA (11:20 AM - 12:00 PM)

- Presenter: ASSAAD, Fakher

Robust Topological Order in Fermionic Z2 Gauge Theories: From Aharonov-Bohm Instability to Soliton-Induced Deconfinement (12:00 PM - 12:40 PM)

- Presenter: GONZÁLEZ-CUADRA, Daniel

Deconfined Z2 gauge theory in Rydberg atom arrays (3:00 PM - 3:40 PM)

- Presenter: SACHDEV, Subir

Trimer resonating-valence-bond states with Z3 topological order in Rydberg atom arrays (4:00 PM - 4:40 PM)

- Presenter: SURACE, Federica Maria

Translation enriched Z2 topological orders and thermal hall from topological vison bands (4:40 PM - 5:20 PM)

- Presenter: SONG, Xueyang

Thursday, May 12, 2022

Gauge theoretic origin of Rydberg spin liquids (9:30 AM - 10:10 AM)

- Presenter: DALMONTE, Marcello

TBA (10:10 AM - 10:50 AM)

- Presenter: MENG, Zi Yang

Disorder-free localization in lattice gauge theories (11:20 AM - 12:00 PM)

- Presenter: HEYL, Markus

TBA (12:00 PM - 12:40 PM)

- Presenter: VERRESEN, Ruben

RVB and Z2 topological order in a simple spin model (3:00 PM - 3:40 PM)

- Presenter: KAUL, Ribhu

Many-body quantum scars in Abelian lattice gauge theories (4:00 PM - 4:40 PM)

- Presenter: BANERJEE, Debasish

TBA (4:40 PM - 5:40 PM)

- Presenter: LUKIN, Mikhail

Friday, May 13, 2022

Towards quantum simulation of U(1) LGTs with alkaline-earth-like atoms (9:30 AM - 10:10 AM)

- Presenter: AIDELSBURGER, Monika

TBA (10:10 AM - 10:50 AM)

- Presenter: KNOLLE, Johannes

Qubit alive thanks to the anomaly (11:20 AM - 12:00 PM)

- Presenter: RICO ORTEGA, Enrique

TBA (12:00 PM - 12:40 PM)

- Presenter: STORNATI, Paolo