February 25, 2025

9:00 - 9:05 Opening Remarks

9:05 - 9:45 Sabre Kais, North Carolina State Univ.
Quantum Machine Learning for Complex Many-Body Systems

9:45 - 10:25 Abhinav Kandala, IBM
Evidence for the Utility of Quantum Computing Before Fault Tolerance

Coffee Break

10:50 - 11:10 He Zhao, FSU Physics
Atomic Engineering of Cuprate $La_{2-x}Sr_xCuO_4$ Tunnel Junctions

11:10 - 11:50 Eduardo Mucciolo, Univ. of Central Florida
Fast Scrambling with Quantum Circuits

11:50 - 12:10 Xiuwen Liu, FSU Computer Science
Recovering Signals from Noisy Quantum Outputs Using Machine Learning

Lunch

1:35 - 2:15 Hanna Terletska , Middle Tennessee St. Univ.
Quantum in Middle Tennessee "R2-HBCU Consortium"

2:15 - 2:55 Alexander Kemper, North Carolina St. Univ.
Quantum Computing for Quantum Materials

Coffee Break

3:20 - 4:00 Alejandro Lopez-Bezanilla, Los Alamos National Laboratory
Scientific Applications of Quantum Annealer Hardware

4:00 - 4:20 Ilias Magoulas, Emory University
Symmetry Projection: Shaping the Future of Heuristic Ansätze

4:20 - 4:40 Qianwen Guo, FAMU - FSU Engineering
Q-RESTORE: Quantum-Driven Framework for Resilient and Equitable Transportation Network Restoration

5:00 - 6:00 Poster Session & Reception

February 26, 2025

9:00 - 9:40 Ezekiel Johnston-Halperin, Ohio St. Univ.
A General & Modular Approach to Solid-state Integration & Readout of Zero-dimensional Quantum Systems

9:40 - 10:20 Tian Li, Univ. of Tennessee Chattanooga
Quantum Sensing and Quantum Control on a Deployed Metro-Scale Quantum Network

Coffee Break

10:45 - 11:05 Luis Balicas, NHMFL & FSU Physics
Ferrimagnetism, Local Lack of Inversion Symmetry, & Nearly Quantized Anomalous Hall Effect in Fe3GaTe2

11:05 - 11:45 Linda Doerrer, Boston University
Heterobimetallic Complexes with 4f Elements for Potential QIS and Qubits

11:45 - 12:05 Jakub Hruby, NHMFL
High-Field EPR in Lanthanides

Lunch

1:35 - 2:15 Joseph Zadrozny, Ohio State University
Tuning Environmental Sensitivity in Molecular Spin Qubits

2:15 - 2:35 Luis Soriano, FSU Physics
Structured Ground States of Randomly Interacting Fermions

2:35 - 2:55 Alexander Volya, FSU Physics
Dynamics & Relaxation in Quantum Many-Body Systems

Coffee Break

3:20 - 4:00 Andrei Rogalev, European Synchrotron Research Facility
X-ray Directional Dichroism – an Element Selective Probe of Magnetoelectric Coupling

4:00 - 5:00 Round Table Discussion

5:00 - 6:00 Poster Session & Reception

February 27, 2025

9:00 - 9:40 Steven Girvin, Yale University
Quantum Signal Processing: How to Make a Schrödinger Cat with Microwaves

9:40 - 10:20 Christopher Wang, University of Chicago
Cavity Quantum Electrodynamics with Electrons on Helium

Coffee Break

10:45 - 11:05 Phong Vo, FSU Physics
Anomalous Chern Insulators in Twisted M+N multilayer graphene

11:05 - 11:25 Eduardo Hernandez, FSU Chemistry
Toward High-Symmetry Lanthanide Dimers as Models for Two-Qubit Gates

Poster Prizes & Closing Remarks

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Poster Presentations

1. Ferdous Ara, NHMFL, *EPR Studies of Ho Dimer: Towards Scaling Up Molecular Clock Qubit*
2. Sebastian Atwood, NHMFL, *Observing Multiphoton Charge Carrier Spin Transitions Between Floquet States in Organic Light-Emitting Diodes*
3. Nicolas Barrett, FAMU Physics, *Magneto-Raman spectroscopy on Ho2Ti2O7*
4. Shubham Bisht, FSU Chemistry, *Investigation of Magnetoelectric Coupling in Cr, Fe, and Cu-Based Molecular Triangles*
5. Somnath Das, FSU Chemistry, *Towards Vibrational Quantum Sensing of Radical Reaction Dynamics*
6. Brittany Grimm, FSU Physics/NHMFL, *EPR Characterization of a Photo-Responsive Fe(III) Spin-Crossover Complex*
7. Arijit Gupta, FSU Physics, *Detection & Control of Quantum Spins in a Diluted Spin Ensemble via On-Chip Superconducting Resonator*
8. Zhenqi Hua, FSU Physics, *Charge-Spin Interconversion in Nonmagnetic Chiral Semiconductor Tellurium*
9. Mohammad Irfan, FSU Physics, *Development of MgO Tunnel Barrier to Probe the Pairing Mechanism in 1-1-5 Heavy Fermions*
10. Sandeep Joy, FSU Physics/NHMFL, *The Nature of the Quantum Liquid-Solid Transition for 2D Electrons*
11. Shyam Karullithodi, FSU Chemistry/NHMFL, *Topological Hall signal in the bulk antiferromagnet Co0.65Fe2.35 GaTe2 crystals*
12. Huiyang Ma, FSU Physics, *Upper Critical In-Plane Field of Spin-Orbit Proximitized Bilayer Graphene*
13. Xian Mallory, FSU Computer Science, *Using Quantum Computing to Infer Copy Number Alterations on the Spatial Transcriptome Data*

Posters cont.

14. Dibya Mondal, FSU Chemistry, *Investigation of High Symmetry Dinuclear Complexes as Platforms or the Design of Molecular Two-Qubit Gates*
15. Saradamoni Mondal, FSU Chem. & Biomedical Engineering, *Single Molecule Detection*
16. Varuna Pathirage, FSU Chemistry, *Modeling Molecular Spin Qubits w/ Equation of Motion Coupled Cluster Theory*
17. Jennifer Reid, FSU Physics/NHMFL, *Angle-Resolved Torque Magnetometry of Epitaxial Pr2Hf2O7 Thin Films*
18. Jake Scally, FSU Computer Science, *Noise Reduction in Quantum Outcomes Using a Richardson-Lucy Deconvolution Algorithm for Quantum State Graphs*
19. Gang Shi, Physics, *Charge Transport in 2D Halide Perovskite (PEA)2PbI4*
20. Kavipriya Thangavel, NHMFL, *High-field EPR Analysis of Co- & Fe-Based Metal Complexes: Unraveling Electronic & Geometric Properties*
21. Phat Tran, FSU Computer Science, *An Effective Analysis-by-Synthesis Framework for Recovering Signals from Noisy Quantum Outputs*
22. Johan van Tol, NHMFL, *Pulsed EPR of Qubit Candidates*
23. Ronghe Wang, FSU Physics/NHMFL, *High-field EPR Study of Mn(acac)3 and Mn(mesacac)3 and Assessment of Coherence Properties*
24. Yan Xin, NHMFL, *Microstructure of Materials Studied by Transmission Electron Microscopy at Atomic Resolution*
25. Xiaotao Xu, FSU Physics, *Atomic Engineering of Cuprate $La_{2-x}Sr_xCuO_4$ Tunnel Junctions*
26. Stephen Yuwono, FSU Chemistry, *Relativistic equation-of-motion coupled-cluster theory for open-shell systems*
27. Zihan Zhang, FSU Physics, *Bulk photovoltaic effect in two-dimensional halide perovskite*
28. Naipeng Zhang, FSU Physics/NHMFL, *Magneto-Raman spectroscopy of quantum magnets*

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Dirac Quantum Discussions @FSU

February 25 - 27, 2025