



# Quantum Frontiers in Molecular Science – Mexican Edition July 29 - August 2, 2024

Universidad Nacional Autónoma de México

<https://sites.google.com/view/quantumfrontiers2024mx/home>

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Updated: July 28, 2024

## Organizers:

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**Location:** Marcos Moshinsky Auditorium  
@ Instituto de Ciencias Nucleares at UNAM

**Directions:** See QR-Code to the right



Monday	July 29
8:15 am	<b>Opening Remarks</b> <b>Frontiers in Quantum Control</b>
8:30 am	Misha Ivanov (Max Born Institute, Germany) <b>Tutorial Lecture:</b> <i>Lightwave driven topology for PHz valleytronics</i>
9:30 am	Keith Nelson (MIT, USA) <i>Coherent control: It really works!</i>
10:10 am	Coffee Break
10:40 am	Mohammed Hassan (University of Arizona, USA) <i>Imaging and controlling the quantum electron motion in solid state</i>
11:20 am	Jonathan Hood (Purdue University, USA) <i>Entanglement with ultracold and organic molecules</i>
12:00 pm	Lunch Break
1:20 pm	Group Photo <b>Frontiers in Molecular Chirality</b>
1:30 pm	Olga Smirnova (Max Born Institute, Germany) <i>Ultrafast molecular chirality: a topological connection</i>
2:10 pm	Vladimiro Mujica (Arizona State University, USA) <i>Spin-dependent catalysis in chiral interfaces</i>
2:50 pm	Coffee Break
3:20 pm	José Eduardo Barrios Vargas (UNAM, Mexico) <i>Chirality: Selectivity in Molecular Electronics</i>
4:00 – 6:00 pm	<b>Poster Session</b>
Tuesday	July 30
	<b>Frontiers in Quantum Coherence</b>
8:30 am	Justin Caram (UCLA, USA) <b>Tutorial Lecture:</b> <i>Developing a Molecular Analog to Atomic Vapor Cells</i>
9:30 am	Ignacio Franco (University of Rochester, USA)

10:10 am	<i>Mapping Decoherence Pathways in Molecules</i>
	Coffee Break
10:40 am	Tom Weinacht (Stony Brook University, USA) <i>Long Lived Electronic Coherences in Molecules</i>
11:20 am	Jiri Vanicek (EPFL, Switzerland) <i>Searching for molecules with long-lasting electronic coherence and charge migration</i>
12:00 pm	Javier Cerrillo (U Politécnica de Cartagena) <i>The Transfer-Tensor Method: Analysis Tool for Polaritons and General Open Quantum Systems</i>
12:40 pm	Lunch Break
	<b>Frontiers in Spectroscopy and Measurement</b>
2:00 pm	Jeffrey Davis (Swinburne Tech., Australia) <i>Coherent Exciton Dynamics in Monolayer WS<sub>2</sub> Reveal Limitations and Opportunities of Floquet Engineering</i>
2:40 pm	Daniel Finkelstein-Shapiro (UNAM, Mexico) <i>Multidimensional Quantum State Tomography with Attosecond Pulses</i>
3:20 pm	Coffee Break
3:50 pm	Jorge Peón (UNAM, Mexico) <i>Non-linear optical direct and indirect activation of molecular actuators</i>
4:30 pm	Andrés Montoya Castillo (U Boulder, USA) <i>Predicting Condensed Phase Optical Spectra Beyond the Condon Limit with Atomistic Simulations</i>
5:10 pm	Carlos Pineda (UNAM, Mexico) <i>Fuzzy measurements and coarse graining in quantum many-body systems</i>

### Wednesday July 31

	<b>Frontiers in Molecular Polaritons</b>
8:30 am	Tönu Pullerits (Lund University, Sweden) <b>Tutorial Lecture:</b> <i>Excited states and their dynamics of molecular systems in microcavities</i>
9:30 am	Andrea Schirato (Politecnico di Milano, Italy; Rice University, USA) <i>Ultrafast light-matter interactions in photonic and plasmonic cavities</i>
10:10 am	Coffee Break
10:40 am	Milan Delor (Columbia University, USA) <i>Realizing ultrafast ballistic energy flow with polarons and polaritons</i>
11:20 am	Jianshu Cao (MIT, USA) <i>Coherent polariton dynamics in disordered and noisy environments</i>
12:00 pm	Sindhana Pannir-Sivajothi (UC San Diego, USA) <i>Molecular polaritons: heat transfer, reactivity, and metrology</i>
12:40 pm	Lunch Break
2:00 pm	<b>Tour through UNAM (Optional)</b>
4:00-	Free Time
6:00 pm	
8:30 pm	<b>Ballet Folklórico de México, Palacio de Bellas Artes (Optional)</b>

### Thursday August 1

	<b>Frontiers in Quantum Transport</b>
8:30 am	Carmen Herrmann (University of Hamburg, Germany) <b>Tutorial Lecture:</b> <i>Atomistic approaches to molecular electronics and spintronics</i>

- 9:30 am Masha Kamenetska (Boston University, USA)  
*Engineering Quantum Properties of Molecular Circuits with Chemistry*
- 10:10 am Coffee Break
- 10:40 am Thomas Stegmann (UNAM, Mexico)  
*Controlling the current flow in 2D Materials*
- 11:20 am Kun Wang (U Miami, USA)  
*Exploring Quantum Transport and Energy Conversion at the Single-Molecule Scale*
- 12:00 pm Uri Peskin (Technion, Israel)  
*Emergence of Boltzmann Subspaces in Open Quantum Systems Far from Equilibrium*
- 12:40 pm Lunch Break
- Frontiers in Quantum Molecular Design**
- 2:00 pm Christian Heide (Stanford/SLAC, USA)  
*Light-field driven electron dynamics in solids*
- 2:40 pm Giuseppe Pirruccio (UNAM, Mexico)  
*Intercavity Polaritons*
- 3:20 pm Coffee Break
- 3:50 pm Francisco Muñoz (Universidad de Chile)  
*Carbon-based single photon emitters in hBN and van der Waals heterostructures*
- 4:30 pm Felix Fischer (UC Berkeley, USA)  
*Engineering Low Energy States in 1D and 2D Carbon Nanomaterials*
- 5:10 pm **Overall discussion**
- 7:30 pm **Conference Banquet at [Carmen Delicatessen](#)**  
Pl. San Jacinto 01, San Ángel TNT, San Ángel, Álvaro Obregón, 01000 Ciudad de México, CDMX, Mexico  
[Google maps link](#)

**Friday August 2**

- 8:00 am-5:30 pm **Trip to Teotihuacán (Optional). Departs from Hotel Krystal**