

# 2024 MURI Programmable Systems with Non-Hermitian Quantum Dynamics

Drs. Ali Sayir, Tristan Nguyen; Grace Metcalfe | August 20-21, 2024 | Arlington, VA

Basic Research Innovation Collaboration Center (BRICC)  
4100 N Fairfax Drive, Suite 450 | Arlington, VA

S. Ozdemir, J. Harris, R. El-Ganainy, K. Murch, and B. Whaley,  
M. Khajavikhan and D. Christodoulides

Time	Topic	Speaker
08:30-08:45	Check-in	
08:45-09:00	Welcome remarks	
09:00-09:15	Overview of the Team and Research Outputs	Prof. Sahin Ozdemir, Pennsylvania State University
09:15-09:45	A new form of amplifier based on non-Hermitian Berry phase	Prof. Jack Harris, Yale University
09:45-10:15	Linear response of non-Hermitian optical systems	Prof. Ramy El-Ganainy, Michigan Technological University
10:15-10:30	<b>BREAK</b>	
10:30-11:00	Exploring and harnessing exceptional points in superconducting qubits	Prof. Kater Murch, Washington University in St. Louis
11:00-11:20	Invited Talk — Restoring adiabatic symmetric transfer in time-modulated non-Hermitian systems with exceptional points	Prof. Ievgen Arkhipov* Palacký University Olomouc, Czechia
11:20-12:00	Plenary Talk — Wavefront shaping in non-Hermitian systems	Prof. Stefan Rotter** Vienna University of Technology, Austria
12:00-1:30	<b>LUNCH</b>	
1:30-2:00	Optimal sensing on an asymmetric exceptional surface	Prof. Birgitta Whaley, University of California, Berkeley
2:00-2:30	Experimental study of non-Hermitian quantum dynamics in photonics platforms	Prof. Mercedeh Khajavikhan, University of Southern California
2:30-3:00	Exploring quantum and classical transport dynamics in non-Hermitian optical networks	Prof. Demetrios Christodoulides, University of Southern California
3:00-03:15	<b>BREAK</b>	
3:15-3:35	Invited Talk — Parity-time symmetry breaking in biological	Prof. Askin Kocabas* Koc University, Turkey
3:35-3:55	Invited Talk — Programming robust dynamics in non-Hermitian biochemical systems	Prof. Evelyn Tang** Rice University

3:55-4:15	Non-Hermiticity as a resource for sensing and perfect absorption	Prof. Sahin Ozdemir, Pennsylvania State University
4:15-4:35	Government only meeting	
4:35-4:50	Government debriefing	
4:50-5:00	Closing remarks by the program officers	
5:00	<b>MEETING ADJOURN</b>	

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\*\*\* All talks by MURI team members are 30 min including 10 min Q&A. Plenary talk is 40 minutes including 10 min Q&A. Invited talks are 20 min including 5 min Q&A.

Program Officers: Dr. Ali Sayir, Dr. Grace Metcalfe, Dr. Tristan Nguyen