



RESEARCH INSTITUTE FOR FUNDAMENTAL SCIENCES



Frontiers of Science

## Quantum Horizons: Developments and Opportunities

Summer Research School - Workshop, July 1 - 15 2022 Gebze, TÜRKİYE

Nowadays, the possibility to control and use the states of individual quantum systems is leading to the second quantum revolution, which will offer great advances in quantum computing, simulation, communication and sensing. The School-Workshop will bring together early career researchers and graduate students to present excellent series of specialized lectures, with a broad scope of exciting topics in the domain of quantum science and technology.

### Program

#### *July 1, Friday*

10:30 – 10:40	Opening	
10:40 – 11:40	<b>Oğuz Gülseren</b>	Magnetic Properties and Critical Assessment of Hubbard U Parameter for 2D Materials: Mxenes as an Example
	<i>Break</i>	
15:00 – 16:00	<b>Alexander Sergienko</b>	Higher-Dimensional Hong-Ou-Mandel Effect and Reconfigurable Entangled-State Networking with Linear-Optical Multiports

#### *July 4, Monday*

19:00 – 20:00	<b>Barry Sanders</b>	Quantum Control for Fast, High-Fidelity Two-Qubit Gates
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#### *July 5, Tuesday*

11:00 – 12:00	<b>İnanç Adagideli</b>	Quantum Dynamics and Computation at the Topological Edge
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### *July 7, Thursday*

<b>11:00 – 12:00</b>	<b>Angelo Bassi</b>	Spontaneous Wave Function Collapse Models: An Introduction
<b>12:00 – 13:00</b>	<b>Özgür Müstecaplıoğlu</b>	Quantum Technologies for Human Vision
	<i>Break</i>	
<b>15:00 – 16:00</b>	<b>Jeremy Levy</b>	Correlated Nanoelectronics and the Second Quantum Revolution

### *July 13, Wednesday*

<b>10:30 – 11:30</b>	<b>Menno Poot</b>	The Ultimate Quantum Limits to Position Detection - What It Takes to Detect Gravitational Waves
	<i>Break</i>	
<b>12:00 – 13:00</b>	<b>Menno Poot</b>	The Ultimate Quantum Limits to Position Detection - What It Takes to Detect Gravitational Waves
	<i>Break</i>	
<b>14:00 – 15:00</b>	<b>Menno Poot</b>	The Ultimate Quantum Limits to Position Detection - What It Takes to Detect Gravitational Waves

### *July 14, Thursday*

<b>16:00 – 17:00</b>	<b>Nuh Gedik</b>	Capturing Light Induced Phase Transitions with Femtosecond Movies
<b>17:00 – 18:00</b>	<b>Edward Farhi</b>	Physics Based Quantum Algorithms
<b>18:00 – 18:10</b>	Closing	