

# Quantum Measurement Theory: Foundations and Applications

**741. WE-Heraeus-Seminar**

**10 - 13 July 2022**

**HYBRID**  
**at the Physikzentrum Bad Honnef/Germany**

**WILHELM UND ELSE  
HERAEUS-STIFTUNG**



# Program (CEST)

**Sunday, 10 July 2022**

16:00 – 18:00 REGISTRATION

18:00 – 19:30 *BUFFET SUPPER and informal get-together*

## Start of the Scientific Program

19:30 – 20:30 Otfried Gühne **Entanglement in Quantum Networks**

20:30 – 21:30 **Discussions**

**Monday, 11 July 2022**

08:00 *BREAKFAST*

09:00 – 10:00 Joseph Renes **Belief Propagation Decoding by Passing Quantum Messages: How to Perform an Optimal Measurement**

10:00 – 10:30 Benoit Vermersch **Probing the Entanglement Structure of Quantum States via Partial-Transpose Moments**

10:30 – 11:00 *COFFEE BREAK*

11:00 – 12:00 Sarah Croke **Non-Locality in Quantum Measurements**

12:00 – 12:30 Michal Oszmaniec **Implementation of Quantum Measurements Using Classical Resources and only a Single Ancillary Qubit**

12:30 – 12:40 **Conference Photo (outside at the main entrance)**

12:40 – 14:00 *LUNCH / DISCUSSIONS*

## Program (CEST)

14:00 – 15:00	Reinhard Werner	<b>Compatibility of Quasi-free Bosonic Channels</b>
15:00 – 15:30	Victoria Wright	<b>Contextuality in Composite Systems: The Role of Entanglement in the Kochen-Specker Theorem</b>
15:30 – 16:00	<i>COFFEE BREAK</i>	
16:00 – 16:30	<b>Discussions</b>	
16:30 – 17:00	<b>Poster Flash Talks</b>	
17:00 – 19:00	<b>Poster Session 1</b>	
19:00	<i>HERAEUS DINNER</i> at the Physikzentrum (cold & warm buffet, with complimentary drinks)	

# Program (CEST)

Tuesday, 12 July 2022

08:00	<i>BREAKFAST</i>	
09:00 – 09:30	Máté Farkas	<b>Mutually Unbiased Measurements</b>
09:30 – 10:00	Erkka Haapasalo	<b>Strategies for Joint Quantum Measurements: Sequential and Parallel Schemes</b>
10:00 – 10:30	Costantino Budroni	<b>Ticking-Clock Performance Enhanced by Nonclassical Temporal Correlations</b>
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 12:00	Andreas Winter	<b>Hidden Markov Models: Classical and Quantum Mechanisms, and Beyond</b>
12:00 – 12:30	Glaucia Murta	<b>Towards Optimal Device-independent Cryptography with Multipartite Nonlocality</b>
12:30 – 14:00	<i>LUNCH / DISCUSSIONS</i>	
14:00 – 15:00	Dagmar Bruss	<b>On Resource Theories for Sets of Quantum Measurements</b>
15:00 – 15:30	René Schwonnek	<b>The Interrelation of Preparation and Measurement Uncertainty</b>
15:30 – 16:00	<i>COFFEE BREAK</i>	
16:00 – 16:30	<b>Discussions</b>	
16:30 – 17:30	<b>Freetime</b>	
17:30 – 18:00	<b>Poster Flash Talks</b>	
18:00 – 19:30	<b>DINNER</b>	
19:30 – 21:30	<b>Poster Session 2</b>	

## Program (CEST)

Wednesday, 13 July 2022

08:00	<i>BREAKFAST</i>	
09:00 – 09:30	Daniel McNulty	<b>Estimating Quantum Hamiltonians via Joint Measurements of Noisy Non-Commuting Observables</b>
09:30 – 10:00	Nikolai Miklin	<b>Device-independent Quantification of Measurement Incompatibility</b>
10:00 – 10:30	Andrea Smirne	<b>Non-Classicality of Multi-Time Measurements in Markovian and Non-Markovian Quantum Processes</b>
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 12:00	Marcus Huber	<b>The Thermodynamics of Quantum Measurements</b>
12:00 – 12:30	Armin Tavakoli	<b>Quantum Measurements in Entanglement-assisted Communications</b>
12:30 – 12:40	Organizers	<b>Closing Remarks</b>
12:40	<i>LUNCH / DISCUSSIONS</i>	

End of seminar and departure