

Input, Output, Insight: Inference from Black Boxes – Contextuality, Bell Inequalities, and Beyond

871. WE-Heraeus-Seminar

**14 Oct - 17 Oct 2026
at the Physikzentrum Bad Honnef, Germany**

**WILHELM UND ELSE
HERAEUS-STIFTUNG**



Program

Wednesday, 14 October 2026

16:00 – 20:00 Registration

18:00 – 19:45 *BUFFET SUPPER*

19:45 – 20:00 Organizers **Opening remarks**

20:00 – 21:00 Adán Cabello **Understanding Quantum Theory
through Non-locality and Contextuality**

Thursday, 15 October 2026

08:00 *BREAKFAST*

09:00 – 10:00 Péter Frenkel **Classical simulations of quantum
channels**

10:00 – 10:30 Jan-Åke Larsson **Oracles, Contextuality, and the
advantage of Quantum Computation**

10:30 – 11:00 *COFFEE BREAK*

11:00 – 12:00 Mariami
Gachechiladze **Quantum Bell Inequalities from Physical
Principles**

12:00 – 12:30 Flavien Hirsch **Bell nonlocality without labels**

12:30 – 12:40 **Conference Photo**

12:40 – 14:00 *LUNCH*

Program

Thursday, 15 October 2026

14:00 – 14:30	Oskari Kerppo	Minimizing entanglement entropy for enhanced quantum state preparation
14:30 – 15:00	Leevi Leppäjärvi	Communication matrices: overview and applications
15:00 – 15:30	Teiko Heinosaari	Minimal communication tests revealing quantum benefit
15:30 – 16:00	<i>COFFEE BREAK</i>	
16:00 – 18:00	Discussions	
18:00 – 19:00	<i>HERAEUS DINNER</i> (social event with cold & warm buffet and complimentary drinks)	
19:00 – 19:30	Poster Flash I	
19:30 – 21:00	Poster Session I	

Program

Friday, 16 October 2026

08:00	<i>BREAKFAST</i>	
09:00 – 10:00	Zhen Peng Xu	Optimal strategies for shadow tomography with limited resources
10:00 – 10:30	Markus Frembs	Generalised contextuality in the n-qubit Pauli group
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 12:00	Markus Müller	How can probabilities of events depend on spatial rotations in any physical theory?
12:00 – 12:30	Mehdi Mhalla	Interrupting the link between correlations and probabilities
12:30 – 14:00	<i>LUNCH</i>	
14:00 – 14:30	Mirjam Weilenmann	Timed demolition measurements
14:30 – 15:00	Miguel Navascues	Causality and realizability of local operations in quantum field theory
15:00 – 15:30	Fatemeh Moradi Kalarde	Fermions are fundamentally more non local than Bosons.
15:30 – 16:00	<i>COFFEE BREAK</i>	
16:00 – 16:15	Video	About the WE-Heraeus Foundation
16:15 – 18:00	Discussions	

Program

Friday, 16 October 2026

- 18:00 – 19:00 *DINNER*
- 19:00 – 19:30 **Poster Flash II**
- 19:30 – 21:00 **Poster Session II**

Saturday, 17 October 2026

- 08:00 *BREAKFAST*
- 09:00 – 10:00 Stefano Pironio **TBA**
- 10:00 – 10:30 Lidya Law **Family of Bell inequalities suited for the (robust) self-testing of n-qubit W states alongside trine measurements**
- 10:30 – 11:00 *COFFEE BREAK*
- 11:00 – 12:00 Sixia Yu **TBA**
- 12:00 – 12:30 Monika Mothsara **Robust One-Sided Device-Independent Quantum Key Distribution via High-Dimensional Steering**
- 12:30 – 12:45 Organizers **Closing Remarks**
- 12:45 – 14:00 *LUNCH*

End of the seminar and departure