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	*COFFEE BREAK*	
16:00 – 18:00	**Discussions**	
18:00 – 19:00	***HERAEUS DINNER*** **(social event with cold & warm buffet and complimentary drinks)**	
19:00 – 19:30	**Poster Flash I**	
19:30 – 21:00	**Poster Session I**	

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Friday, 16 October 2026

08:00	*BREAKFAST*	
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	*COFFEE BREAK*	
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	*LUNCH*	
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	*COFFEE BREAK*	
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	**An EPR principle for quantum correlations**
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