

New Opportunities in Physics-based Computing: Magnonics, Spintronics, Photonics and Beyond

853. WE-Heraeus-Seminar

**26 Apr - 30 Apr 2026
at the Physikzentrum, Bad Honnef, Germany**

The WE-Heraeus Foundation supports research and education in science, especially in physics.
The Foundation is Germany's most important private institution funding physics.

**WILHELM UND ELSE
HERAEUS-STIFTUNG**



Program

Sunday, April 26, 2026

17:00 – 21:00 Registration

18:30 – 21:00 *BUFFET SUPPER*

Monday, April 27, 2026

08:00 *BREAKFAST*

09:00 – 09:45 Scientific organizers **Opening, Welcome and Intro film team and Intro WEH**

09:45 – 10:30 Damien Querlioz **Taming and exploiting the physics of memristors**

10:30 – 11:00 *COFFEE BREAK*

11:00 – 11:45 Karin Everschor-Sitte **Unconventional computing with excitations**

11:45 – 12:30 Hidekazu Kurebayashi **Dynamical stability of magnetisation and its potential use for probabilistic computing**

12:30 *LUNCH*

Program

Monday, April 27, 2026

14:30 – 15:15	Emilie Jué	Superconducting self-training neural network with nanosecond learning
15:15 – 16:00	Daniel Brunner	In-situ training and scaling laws for computing with physical substrates
16:00 – 16:30	<i>COFFEE BREAK</i>	
16:30 – 17:15	Klaus Knobloch	AI/ML emerging compute paradigms & next gen architectures
17:15 – 18:00	Tobias Hula	Innovation: Scientific Fascination vs. Industrial Reality?
18:30	<i>DINNER</i>	
20:00	Poster session and Discussion	

Program

Tuesday, April 28, 2026

08:00	<i>BREAKFAST</i>	
09:00 – 09:45	Erik Folven	Memory and directionality in a magnetic metamaterial
09:45 – 10:30	Tom Hayward	Go Hard(ware network) or go home: Networking spintronic metamaterials for neuromorphic computation
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Claas Abert	Inverse micromagnetics for the design and characterization of magnonic and spintronic devices
11:45 – 12:30	György Csaba	Nonlinear waves and oscillators for computing
12:30 – 12:40	Conference photo	
12:40	<i>LUNCH</i>	

Program

Tuesday, April 28, 2026

14:30 – 15:15 Amel Kolli
Victor Gonzalez

15:15 – 16:00 Akash Kumar
Mohamed Menshawy

16:00 – 16:30 *COFFEE BREAK*

16:30 – 17:15 **Poster Flash**

17:15 – 18:00 **Poster session**

18:30 *DINNER*

20:00 **Poster session and Discussion**

Program

Wednesday, April 29 2026

08:00	<i>BREAKFAST</i>	
09:00 – 09:45	Kathy Lüdge	Reservoir Computing with Dynamical Systems in Optics and Electronics
09:45 – 10:30	Bert Koopmans	Applications of magnetization switching by light – Towards spintronic-photonic integration
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Na Lei	Magnetics and ferroelectrics based physical reservoir computing for energy-efficient time-series and multimodal artificial intelligence
11:45 – 12:30	Juliane Heim Gijs Simons	
12:30	<i>LUNCH</i>	
14:30 – 15:15	Serge Massar	Machine Learning with Equilibrium Propagation.
15:15 – 16:00	Philippe Talatchian	On-chip Training of Stochastic Multilayer Spintronic Neural Networks
16:00 – 16:30	<i>COFFEE BREAK</i>	

Program

Wednesday, April 29, 2026

16:30 – 17:15 Ursula Ebels
Yuean Zhou

17:15 – 18:00 **Poster Session**

18:30 *HERAEUS DINNER at the Physikzentrum*
(cold and warm buffet, with complimentary drinks)

20:00 **Poster session and Discussion**

Thursday, April 30, 2026

08:00 *BREAKFAST*

09:00 – 09:45 Susan Stepney **New models of computation to support novel physics-based computing devices**

09:45 – 10:30 Jack Gartside **Learning nonlinear heterogeneity in physical Kolmogorov-Arnold networks**

10:30 – 11:00 *COFFEE BREAK*

11:00 – 11:45 Ryosho Nakane **Reservoir computing performance via nonlinearity-induced spin waves**

11:45 – 12:30 Christopher Heins **Magnetic vortices as a platform for magnonic pattern recognition and self-induced floquet dynamics**

12.30 – 12.45 Scientific organizers **Closing and awards**

12:45 *LUNCH*

End of seminar and departure