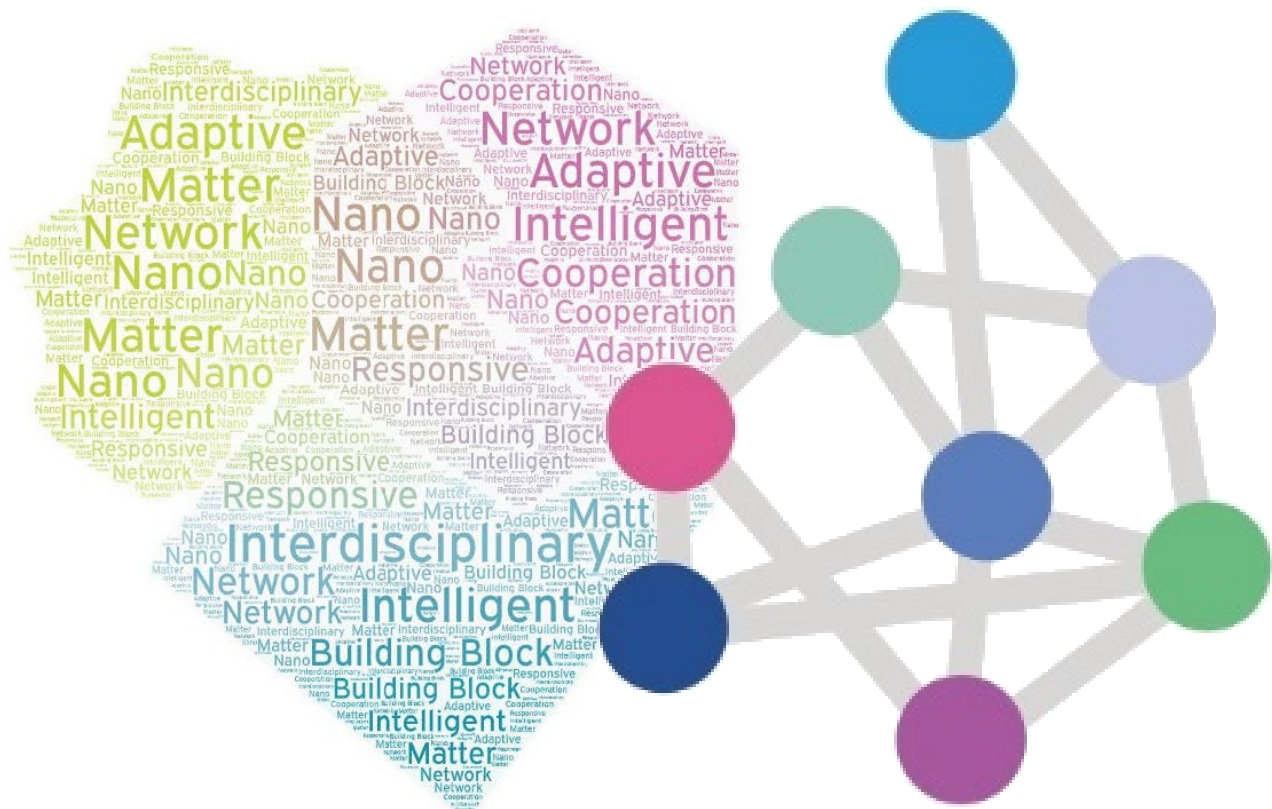


Intelligent Matter Meets Neurotronics

April 24th – 25th, 2023
Münster, Germany

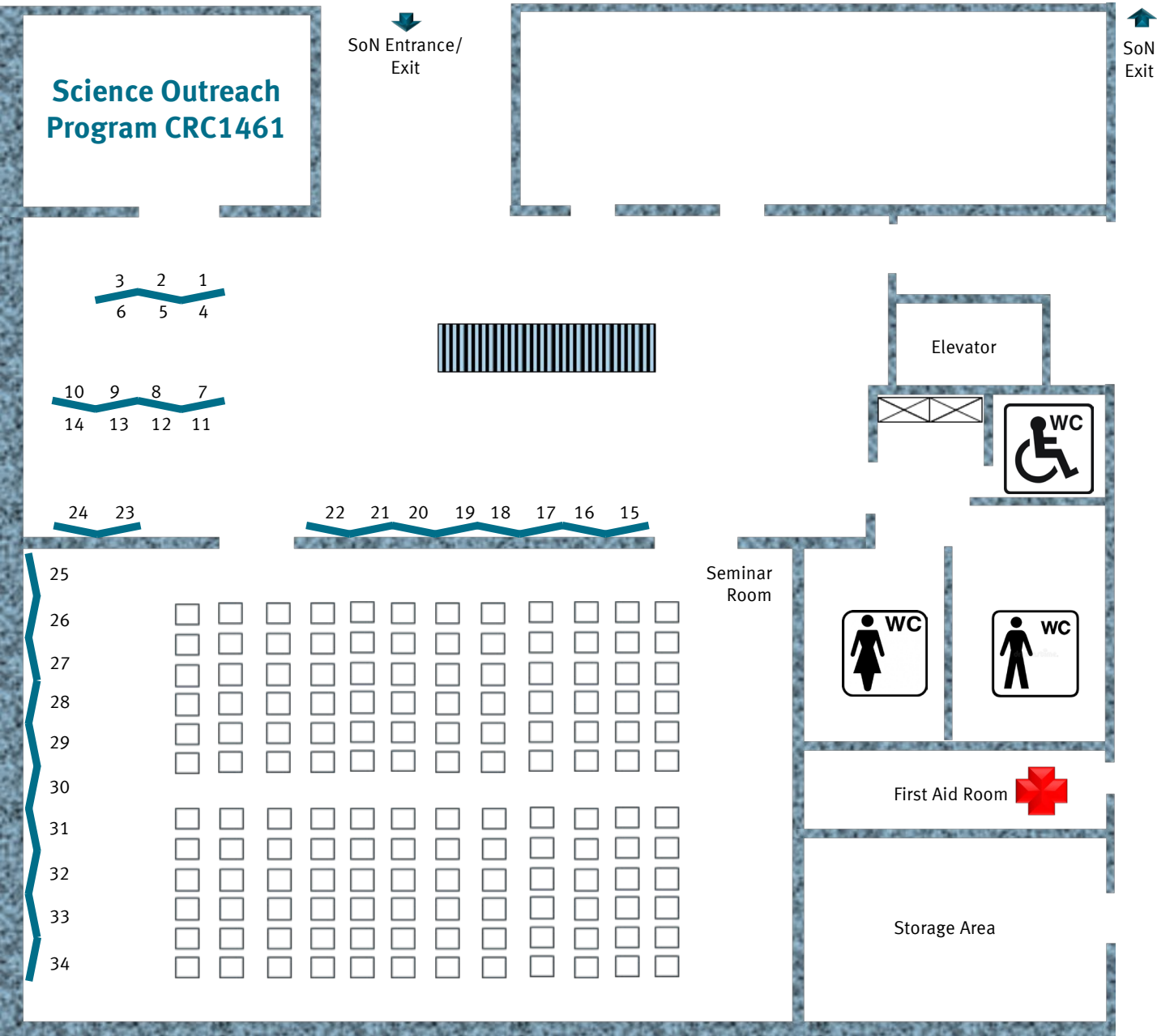


List of Posters



Intelligent Matter Meets Neurotronics April 24th - 25th, 2023

Poster Sessions Setup



Poster Session I (even numbers): April 24th 6:00pm – 7:00pm
Poster Session II (odd numbers): April 25th 1:45pm – 2:45pm

IMNeuS23 Poster Contributions

(alphabetical order first author's surname)

- 01. Dynamic Memristive Networks Based on Near-field Optics and Plasmonic Nanostructures**
Fatemeh Abshari, Blessing Adejube, Moritz Paulsen, Salih Veziroglu, Alexander Vahl, and Martina Gerken
Kiel University
- 02. Implementing a Bio-Inspired Oscillator: Theory and Practice**
Bakr Al Beattie¹, Maximiliane Noll², Hermann Kohlstedt², and Karlheinz Ochs¹
¹Ruhr University Bochum, ²Kiel University
- 03. Nonlinear Activation Functions in Optical Neural Networks**
Marlon Becker, Jan Riegelmeyer, Maximilian Seyfried, Bart Jan Ravoo, Carsten Schuck, and Benjamin Risse
University of Münster
- 04. Integrating Memory into Hybrid Opto-Electronic Circuits**
Ivonne Bente¹, Reinier Cool², Wolfram Pernice^{1,3}, and Wilfred G. van der Wiel²
¹University of Münster, ²University of Twente, ³Heidelberg University
- 05. Self-Assembly of Hybrid Nanostructures for Brain-Inspired Electronics**
Marc Beuel^{1,2}, Jonas Mensing¹, Lisa Schlichter¹, Andreas Heuer¹, Bart Jan Ravoo¹, and Wilfred van der Wiel²
¹University of Münster, ²University of Twente
- 06. Developing Tunable Triplet Emitters towards Adaptive Electroluminescent Materials**
Stefan Buss, Alex Oster, Dominik Schwaab, Cristian A. Strassert, and Nikos Doltsinis
University of Münster
- 07. RRAM at IHP for Emerging Non-Volatile In-Memory Neuromorphic Computing Applications**
Keerthi Dorai Swamy Reddy, Mamathamba Kalishettyhalli Mahadevaiah, Max Uhlmann, Andreas Mai, Christian Wenger, and Gerhard Kahmen
Leibniz Institute for High Performance Microelectronics
- 08. Exploiting the Interplay of Multiple Independent Stimuli: Designing a Ratchet-Like Process**
Torsten Dünnebacke, Niklas Niemeier, Sebastian Hochstädt, Gustavo Fernandez, Johannes Neugebauer, and Michael Ryan Hansen
University of Münster
- 09. Multistimuli Responsive Materials with Memory and Feedback Function**
Saskia Frank, Alice Casadidio, and Seraphine Wegner
Universitätsklinikum Münster

- 10. *Tripedalia cystophora* – Exploring System Level Information Processing Using a Simple Nervous System**
Jan-Frederik Freiberg¹, Lisa Knoff², Wilhelm Braun², Claus C. Hilgetag², and Jan Bielecki¹
¹Kiel University, ²University Medical Center Eppendorf

- 11. *In operando* Photoemission Spectroscopy and Electron Microscopy of Neuromorphic Systems**
Ole Gronenberg¹, Alena Nierhauve^{1,2}, Blessing Adejube¹, Matthias Kalläne^{1,2}, Alexander Vahl¹, Tammo Zimmermann^{1,2}, Jens Buck^{1,2}, Rok Venturini^{3,4}, Zhansong Geng⁵, Frank Schwier⁵, Chithra Sharma^{1,2}, Chao Zhang⁵, Franz Faupel¹, D. Mihailović^{4,7}, Martin Ziegler⁵, Lorenz Kienle¹, and Kai Rosnagel^{1,2,7}
¹Kiel University, ²Ruprecht Haensel Laboratory DESY/CAU, ³Jožef Stefan Institute, ⁴University of Ljubljana, ⁵Ilmenau University of Technology, ⁶CENN Nanocenter, ⁷German Electron Synchrotron DESY

- 12. Tuning of Bio-Inspired MEMS Resonator**
Vishal Gubbi, Tzvetan Ivanov, Kalpan Ved, Claudia Lenk, and Martin Ziegler
Ilmenau University of Technology

- 13. Adaptive Air-Water Interfaces with Spiropyran and Arylazopyrazole Photoswitches**
Michael Hardt and Björn Braunschweig
University of Münster

- 14. Multi-Ion Battery-Like Electrodes in Sparse 3D Networks for Non-Linear Dynamics**
Pia Holtz, Sören Kaps, Maik-Ivo Terasa, and Rainer Adelung
Kiel University

- 15. New Materials for Memristive Devices**
Anna Linkenheil¹, Rouven Lamprecht², Nebojsa Levkovski¹, Theresa Scheler¹, Finn Zahari², Richard Marquardt², Luca Vialetto², Hermann Kohlstedt², and Martin Ziegler¹
¹Ilmenau University of Technology, ²Kiel University

- 16. From Biological Memory to Artificial Memory – Learning in the Slime Mold *Physarum polycephalum* and its Memristive Behavior in Hybrid Computing**
Roshani Madurawala, Jannes Freiberg, Maik-Ivo Terasa, Sören Kaps, Rainer Adelung, and Christian Kaernbach
Kiel University

- 17. Memsensor Devices: An Innovative Approach to Bio-Inspired Sensing**
Roshani Madurawala, Rohit Gupta, Maik-Ivo Terasa, Sören Kaps, Thomas Strunskus, Franz Faupel, Rainer Adelung, and Alexander Vahl
Kiel University

- 18. Silicon Neurons Towards Tactile Sensing with PiezoFET**
Bharath Kumar Singh Muralidhar, Rafael Ashkrizzadeh, Sebastian Simmich, Adrian Petraru, Robert Rieger, and Hermann Kohlstedt
Kiel University

- 19. Analysis and Formation of First Neuronal Circuits in *Hydra* Hatchlings**
Christopher Noack, Christoph Giez, Ornina Merza, and Thomas C.G. Bosch
Kiel University
- 20. Control of the Primary and Secondary Structure in Synthetic Polymers to Access Adaptive Soft Materials**
Christophe Pauly, Kirill Markelov, Alexis Emmerich, Philipp Gerdt, and Armido Studer
University of Münster
- 21. Dynamic maintenance of the nerve network in *Hydra***
Dijana Pavleska¹, Wilhelm Braun², Christoph Giez¹, Philipp Hövel¹, Thomas Bosch¹, Claus Hilgetag², and Alexander Klimovich¹
¹Kiel University, ²University Medical Center Eppendorf
- 22. A Semi-Synthetic Nanosystem for Programmable Control of Output Based on Rational Design and Directed Evolution**
Aileen Peters, Anna-Maria Böttick, Esther Tanumihardia, and Andrea Rentmeister
University of Münster
- 23. Spin Wave Device as a Basis for Neuromorphic Computing**
Dmitrii Raskhodchikov¹, Jannis Bensmann¹, Kirill O. Nikolaev¹, Emma Lomonte¹, Lin Jin¹, Paul Steeger¹, Johann A. Preuß¹, Robert Schmidt¹, Robert Schneider¹, Johannes Kern¹, Steffen Michaelis de Vasconcellos¹, Rudolf Bratschitsch¹, Sergej O. Demokritov¹, Wolfram H.P. Pernice^{1,2}, and Vladislav E. Demidov¹
¹University of Münster, ²Heidelberg University
- 24. Behavioral Readouts and Macroscopic Neuroanatomy of the Lizard *Anolis carolinensis***
Niels Röhrdanz, Anil S. Menon, Eva Peschke, Olga Will, Mathias Hoppe, and Peer Wulff
Kiel University
- 25. Mimicking Cochlea Processing Using Critically Coupled MEMS Sensors**
Folke Rolf¹, Kalpan Ved², Claudia Lenk², Martin Ziegler², and Thomas Meurer¹
¹Karlsruher Institute of Technology, ²Ilmenau University of Technology
- 26. Light-Driven Microswimmers with a Symmetry Breaking Refractive Index Profile**
Matthias Rüschenbaum¹, Julian Jeggle¹, Cornelia Denz², and Raphael Wittkowski¹
¹University of Münster, ²PTB
- 27. INF: Data Management and Analysis**
Deepak Sharma, Matthias Renz, and Hermann Kohlstedt
Kiel University

28. New Photoswitches for Integration in Adaptive Nanosystems

Malte Schrader, Florian Bosse, Bastian Stövesand, Bart Jan Ravoo, and Frank Glorius
University of Münster

29. Adaptive Cell-Matrix Nanosystems

Inka Schröter², Tobias Rex¹, Theresa Mößer¹, Carsten Grashoff¹, Cristian A. Strassert¹, and Britta Trappmann²

¹University of Münster, ²MPI Molecular Biomedicine

30. Towards Electro-Optical In-Memory Computing with Phase Change Materials

Akhil Varri¹, Daniel Wendland¹, Niklas Vollmar¹, Martin Salinga¹, and Wolfram H.P. Pernice^{1,2}

¹University of Münster, ²Heidelberg University

31. Short and Long Timescale Dynamics in Amorphous Phase Change Materials

Sebastian Walfort, Jakob Ballmaier, Hannah Treppke, and Martin Salinga

University of Münster

32. Light-Controlled Anion-Binding Adaptive Supramolecular Systems

Leonard Wyszynski, Leon Hoppmann, Olga García Mancheño, and Monika Schönhoff

University of Münster

33. Multiscale Transport Modeling: From Process Plasmas to Resistive Switching Devices

Sahitya Yarragolla¹, Torben Hemke¹, Luca Vialetto², Thomas Mussenbrock¹, and Jan Trieschmann²

¹Ruhr University Bochum, ²Kiel University

34. Adaptive Polymer Morphologies through Reversible Block Fragmentation

Katharina Ziegler, Yorick Post, André Gröschel, and Bart J. Ravoo

University of Münster

