



Connecting Disciplines Through Shared Methods

CDSC Kick-off, 9 Feb 2026, Schloss Aula and Foyer

PROGRAM & LIST OF POSTERS

Data Science | AI & Machine Learning | Scientific Computing | Mathematical Modeling | Complex Systems

PROGRAM

09.00 AM AULA	OPENING with a welcome address by Rector Prof. Johannes Wessels Prof. Uwe Thiele
09.10 AM AULA	<i>Introducing the CDSC: Who We Are, What We Do, Where We're Heading</i> Dr. Oliver Kamps
09.40 AM AULA	KEYNOTE <i>Human Centered Twinned AI</i> Prof. Antonio Krüger (Deutsches Forschungszentrum für Künstliche Intelligenz)
10.30 AM FOYER	 COFFEE BREAK
11.00 AM AULA	KEYNOTES <i>Generalization and Errors of Humans and Machines</i> Prof. Barbara Hammer (Universität Bielefeld) <i>Towards an Artificial Muse for New Ideas in Physics</i> Prof. Mario Krenn (Universität Tübingen)
12.40 PM FOYER	 LUNCH BREAK
02.00 PM AULA	KEYNOTE <i>Shaping the Future of AI: From Mathematical Foundations to Reliable and Sustainable Next-Generation Computing</i> Prof. Gitta Kutyniok (LMU München)
02.50 PM FOYER	 POSTER EXPO AND NETWORKING SESSION Expert discussions, peer exchange and interdisciplinary networking over coffee and cookies
S 151	SIDE PROGRAM <i>Spotlights on Sustainability: Insights and Ideas from Across Campus</i> Various contributors
	<i>Interactive AI in VR: Hands-On Immersive Medical Training</i> Research group of Prof. Benjamin Risse
05.00 PM AULA	KEYNOTE <i>Machine Learning for Earth System Science</i> Prof. Niklas Boers (TU München)
05.50 PM AULA	CLOSING REMARKS Dr. Oliver Kamps
06.00 PM AULA	END OF THE EVENT

LIST OF POSTERS

The **POSTER EXPO & NETWORKING SESSION** is scheduled for **from 2:50 to 5:00 pm** in the Foyer. Posters will be available for preview during the lunch break.

Alongside the main category, **Connecting Disciplines through Shared Methods**, the poster session features the sections **Spotlights on Sustainability** and **Meet Our Campus Connections**.

CONNECTING DISCIPLINES THROUGH SHARED METHODS

Connecting Disciplines Through Shared Methods brings together researchers from a wide range of disciplines who apply, advance, or examine the theoretical foundations of methods from data science, artificial intelligence and machine learning, mathematical modeling, scientific computing, and complex systems.

CD.1 Molecular Machine Learning and Data-Driven Drug Development

Oliver Koch

Institute for Pharmaceutical and Medicinal Chemistry

CD.2 Prediction of Antimicrobial Resistance with Machine Learning

Dominic Enders¹, Raphael Koch², Frieder Schaumburg¹, Antje Westendorf¹, Niklas Wiesmann¹

¹ *Institute of Medical Microbiology*

² *Institute of Biostatistics and Clinical Research*

CD.3 Machine Learning and Data Engineering

Fabian Gieseke

Department of Information Systems

CD.4 Modeling and Control of Complex Systems

Svetlana Gurevich

Institute for Theoretical Physics

CD.5 Machine Learning for Understanding Complex Molecular Systems in Simulations and Experiments

Mirko Fischer, Andreas Heuer, David Bienek, Katharina Kintrup

Institute for Physical Chemistry

CD.6 Learning Based Approximation Methods in Scientific Computing

Mario Ohlberger

Institute for Analysis and Numerics

CD.7 Bubbles in Inviscid Fluids

Björn Gebhard, Yuanjiang Han, Lukas Niebel, Christian Seis

Institute for Analysis and Numerics

- CD.8** **From Molecules to Models: Interfacing Organic Chemistry & Data Science**
Frank Glorius, Niklas Hölter, Jan Christopher Spies, Florian Boser, Rana Debanjan, Leon Schlosser, Nick Wierich
Institute of Organic Chemistry
- CD.9** **Analyzing Social Interaction Using Computer Vision**
Nicolas Legewie
Sociology Department
- CD.10** **Measuring the Communication of Threat**
Bernd Schlipphak¹, Mitja Back², Johannes Leonhard Klinz²
¹ *Department of Political Science*
² *Department of Psychology*
- CD.11** **Complex Systems and Machine Learning**
Oliver Kamps, Katrin Schmietendorf, Oliver Mai, Tim Kroll
Center for Data Science and Complexity
- CD.12** **Self-organization and Complexity**
Uwe Thiele and group members
Institute for Theoretical Physics
- CD.13** **Bridging Disciplines: From Text Mining and Complex Systems to the Human Microbiome**
Sven Kleine Bardenhorst, Daniel Hagenfeld, André Karch, Nicole Rübsamen
Institute for Epidemiology and Social Medicine
- CD.14** **New Non-invasive and Machine-learning Based Diagnostic Approaches for Focal Epilepsy**
Lala Jafarova, Yvonne Buschermöhle, Malte Bernhard Höltershinken, Peppi Schulz, Demet Yesil-Bas, Carsten Wolters
Institute for Biomagnetism and Biosignalanalysis
- CD.15** **Machine Learning for Spatial Modeling Across Disciplines**
Hanna Meyer
Institute of Landscape Ecology
- CD.16** **Safe Learning in Hybrid Systems Using Contracts**
Julius Adelt, Pauline Anne Blohm, Paula Herber, Mathis Niehage, Anna Remke
Computer Science Department
- CD.17** **From Materials Science to AI Hardware Design: Exploring the Potential of Opto-electronic Phase Change Devices for In-Memory Computing**
Niklas Vollmar, Nils Holle, Nils Weber, Martin Salinga
Institute of Materials Physics
- CD.18** **Deep Learning Based Design of Nanophotonic Circuit Components**
Marlon Becker, Marco Butz, David Lemli, Carsten Schuck
Department for Quantum Technology
- CD.19** **Parametrization of the Homogenous Electron Gas via Symbolic Regression**
Johannes Neugebauer
Institute of Organic Chemistry and Center for Multiscale Theory and Computation

- CD.20** **AI-assisted Ultrafast and Precise Monte Carlo Event Generation for CERN LHC Physics**
Tomas Jezo, Michael Klasen, Jan-Christopher Knetsch
Institute for Theoretical Physics
- CD.21** **Mathematical Modeling of Biophysical Complexity**
Diana Khoromskaia, Stefan Niehaus
Institute for Theoretical Physics
- CD.22** **User-centric Visual Data Analysis**
Lars Linsen
Institute of Computer Science
- CD.23** **Fractal Embeddings: Chaos Game Representation for Sequence Analysis**
Hannah Franziska Löchel
Institute for Medical Informatics
- CD.24** **AI for Archaeological Remote Sensing: Identifying Ancient Underground Aqueduct Systems in Declassified Spy Imagery**
Samran Asiabani, Janoscha Kreppner
Institute for Ancient Oriental Studies and Near Eastern Archaeology
- CD.25** **Machine Learning in Biomedicine**
Marius Welzel, Sandra Clemens, Leon Fehse, Michael Fujarski, Arsam Tajabadi, Dominik Heider
Institute for Medical Informatics
- CD.26** **CausalAI4Health: Advancing Trustworthy and Responsible Causal Artificial Intelligence for Precision Medicine and Public Health**
Adèle Helena Ribeiro, Dominik Heider
Institute for Medical Informatics
- CD.27** **Data Science in Geochemistry: CODA and Inverse Methods to Quantify Earth Evolution**
Zachary T. Eriksen, Marthe Klöcking, Andreas Stracke
Institute for Mineralogy
- CD.28** **Pairing Dialogic Syntax with Machine Learning: Dialogic Resonance and Stance Alignment in German Conversation**
Alexander Zahrer, Nele Brathe
Institute for Mineralogy
- CD.29** **Using the Complex Dynamic Systems Theory to Explain Processes of Language Learning**
Ulrike Gut, Romana Kopeckova
English Department
- CD.30** **Enabling Predictive Maintenance with Artificial Intelligence**
Bernd Hellingrath
Department of Information Systems
- CD.31** **MDPath: Unraveling Allosteric Communication Paths of Drug Targets Through Molecular Dynamics Simulations**
Marvin Tattera, Marcel Bermúdez, Niklas Piet Doering, Gerhard Wolber
Institute of Pharmaceutical and Medicinal Chemistry

- CD.32 Digital Media & Computational Methods**
Georg Hertkorn, Lennart Höfig, Jakob Jünger, Katharina Maubach
Institute of Communication Studies
- CD.33 Differential Geometry Meets Applied Mathematics – Shape Spaces and Manifold Learning**
Sascha Beutler, Juliane Braunsmann
Institute for Computational and Applied Mathematic
- CD.34 Artificial Intelligence in Social Media: Automated Content Production and Disinformation Detection**
Christian Grimme, Marie Griesbach, Janina Lütke-Stockdiek, Lennart Schäpermeier, Lucas Stampe
Department for Information Systems
- CD.35 AI-assisted Process Mining for Context-sensitive Analysis Support**
Paul Brützke, Robin Killewald, Sandro Franzoi, Jan vom Brocke
Department for Information Systems
- CD.36 Random Label Prediction Heads for Studying and Controlling Memorization in Deep Neural Networks**
Marlon Becker, Jonas Konrad, Luis Garcia Rodriguez, Benjamin Risse
Institute for Geoinformatics
- CD.37 Pattern Recognition and Image Analysis (PRIA) Group: Advanced AI/ML Methods and Applications**
Xiaoji Jiang
Department for Computer Science
- CD.38 LLM-Based Agent Simulations for Modeling Individual Differences and Advancing Professional Social Interactions**
Mitja Back¹, Ole Hätscher¹, Jennifer Diabel³, Anna Junga³, Pascal Kockwelp², Bernhard Marschall³, Leon Pielage², Benjamin Risse²
¹*Department of Psychology*
²*Institute for Geoinformatics*
³*Institute of Education and Student Affairs*
- CD.39 Efficient Simulations, Complex Models & Data-integration**
Gunnar Birke, Christian Engwer, Alexander Schell, Sinta Maria Siby
Institute of Applied Mathematics
- CD.40 Comparing Image Representations in Deep Neural Networks and Human Memories**
Charlotte Luzia Atzert, Niko Busch, Filip Děchtěrenko, Jiří Lukavský
Institute of Psychology
- CD.41 Data Science and Complexity in Movement Science**
Heiko Wagner, Myriam de Graaf et al.
Institute of Sport and Exercise Science
- CD.42 Signal Dissection and Modern Analyses for Molecular Medicine**
Michael Grau¹, Karoline Möhr², Peter Lenz², Georg Lenz¹
¹ *Department of Medicine A for Hematology, UKM*
² *Department of Physics, University of Marburg*

MEET OUR CAMPUS CONNECTIONS

[Meet Our Campus Connections](#) highlights partner institutions and centers that have collaborated with the CDSC (or CeNoS) in recent years, acknowledging their essential contributions to a vibrant, interdisciplinary network supporting research, teaching, and transfer.

- CC.1** **The Münster Center for Open Science**
Lukas Röseler
Münster Center for Open Science (MüCOS)
- CC.2** **Otto Creutzfeldt Center**
Svenja Gremmler
Otto Creutzfeldt Center for Cognitive and Behavioral Neuroscience
- CC.3** **Support for Emerging Researchers – Based on Current Data**
Iva Ognjanovic
Münster Centre for Emerging Researchers (CERes)
- CC.4** **Kontaktstelle Studium im Alter**
Veronika Jüttemann
Kontaktstelle Studium im Alter
- CC.5** **Interdisciplinary Center for Mathematical Modeling of Infectious Disease Dynamics**
Rasmus Kristoffer Pedersen
Interdisciplinary Center for Mathematical Modeling of Infectious Disease Dynamics (IMMIDD)
- CC.6** **The Center of Interdisciplinary Sustainability Studies**
Carolin Bohn, Tillmann Buttschardt, Fynn M. Schmidt
Zentrum für Interdisziplinäre Nachhaltigkeitsforschung (ZIN)
- CC.7** **CMTC**
Martin Korth
Center for Multiscale Theory and Computation
- CC.8** **IVV4**
Martin Korth
IVV4
- CC.9** **The Center for Philosophy of Science**
Jens Lemanski and the ZfW team
Zentrum für Wissenschaftstheorie
- CC.10** **incub.ai - From AI to Start-Up**
Friedrich Bach, Jonathan Wandscheer
REACH

SPOTLIGHTS ON SUSTAINABILITY: INSIGHTS AND IDEAS FROM ACROSS CAMPUS

The [Spotlights on Sustainability](#) showcase projects that explore how data science and complexity approaches help address today's sustainability challenges across environmental, social, and economic systems, alongside projects examining the double-edged implications of AI for sustainability.

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| SoS.1 | AI4Forest
Fabian Gieseke
<i>Department of Information Systems</i> |
| SoS.2 | Quantifying the Impact of k-Anonymizing Trajectory Data on Common Traffic Management Use Cases
Christian Fries, Jan Kettler, Christian Kray, Thorsten Passfeld, Ralf Tönjes
<i>Institute for Geoinformatics</i> |
| SoS.3 | senseBox Eye: Energy and Resource-efficient AI for IoT Applications
Thomas Bartoschek, Fabian Gieseke, Nina Herrmann, Benjamin Karic, Paula Scharf, Angela Schwering, Jan Stenkamp
<i>Institute for Geoinformatics</i> |
| SoS.4 | Imagining Sustainable AI Beyond Tech Narratives
Sigrid Kannengießer, Anne Mollen, Anastasia Glawatzki
<i>Department of Communications</i> |
| SoS.5 | Mapping and Explaining Grassland Biodiversity with Explainable Machine Learning to Support Sustainable Management
Jan Linnenbrink, Maite Lezama Valdes, Marvin Ludwig, Lena Neuenkamp, Norbert Hölzel, Hanna Meyer
<i>Institute of Landscape Ecology</i> |
| SoS.6 | Resilient Healthcare in Times of Crises
Dennis Krämer, Malina Spieker
<i>Faculty of Education and Social Sciences</i> |
| SoS.7 | Anchoring Sustainability at the CDSC: Vision and Practice Across Research, Teaching, and Transfer
Katrin Schmietendorf, Oliver Kamps
<i>Center for Data Science and Complexity</i> |

