



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

Introducing the CDSC: Who We Are, What We Do, Where We're Heading
Dr. Oliver Kamps

09.40 AM | AULA

KEYNOTE

Human Centered Twinned AI

Prof. Antonio Krüger (Deutsches Forschungszentrum für Künstliche Intelligenz)

10.30 AM | FOYER

 COFFEE BREAK

11.00 AM | AULA

KEYNOTES

Generalization and Errors of Humans and Machines

Prof. Barbara Hammer (Universität Bielefeld)

Towards an Artificial Muse for New Ideas in Physics

Prof. Mario Krenn (Universität Tübingen)

12.40 PM | FOYER

 LUNCH BREAK

02.00 PM | AULA

KEYNOTE

Shaping the Future of AI: From Mathematical Foundations to Reliable and Sustainable Next-Generation Computing

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

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SIDE PROGRAM

Spotlights on Sustainability: Insights and Ideas from Across Campus

Various contributors

Interactive AI in VR: Hands-On Immersive Medical Training

Research group of Prof. Benjamin Risse

05.00 PM | AULA

KEYNOTE

Machine Learning for Earth System Science

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 Höller, 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 Taterra, 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 Braunsmaann
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.

SoS.1 **AI4Forest**
Fabian Gieseke
Department of Information Systems

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
Institute for Geoinformatics

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
Institute for Geoinformatics

SoS.4 **Imagining Sustainable AI Beyond Tech Narratives**
Sigrid Kannengießer, Anne Mollen, Anastasia Glawatzki
Department of Communications

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 Hözel, Hanna Meyer
Institute of Landscape Ecology

SoS.6 **Resilient Healthcare in Times of Crises**
Dennis Krämer, Malina Spieker
Faculty of Education and Social Sciences

SoS.7 **Anchoring Sustainability at the CDSC: Vision and Practice Across Research, Teaching, and Transfer**
Katrín Schmietendorf, Oliver Kamps
Center for Data Science and Complexity

