

14TH SINO-GERMAN FRONTIERS OF SCIENCE SYMPOSIUM

第十四届中-德前沿科学研讨会
APRIL 10-13, 2025

AGENDA BOOK

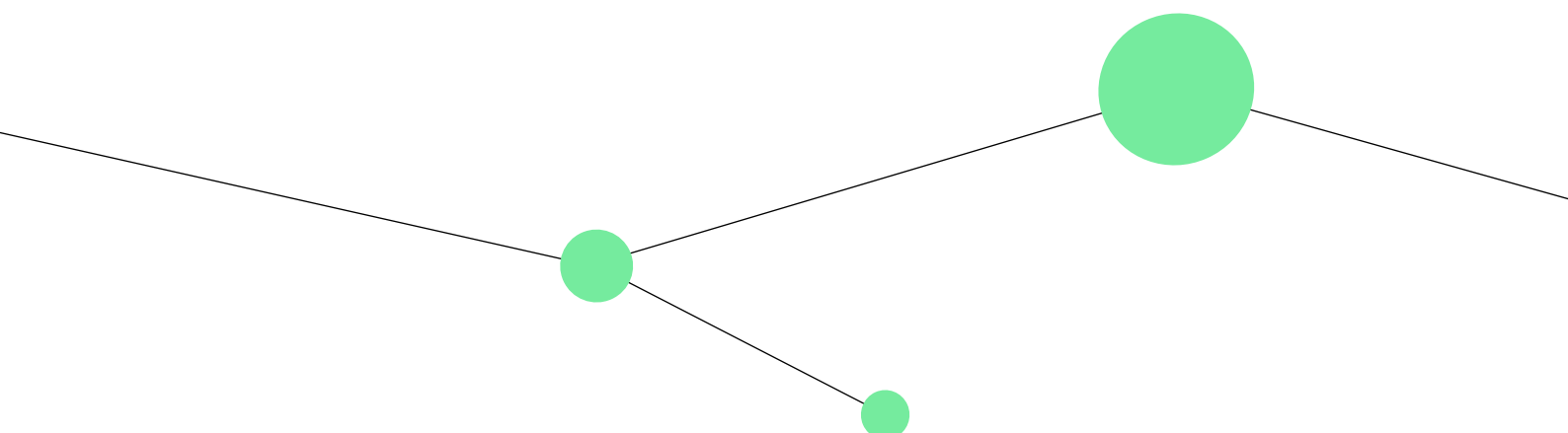


Alexander von
HUMBOLDT
STIFTUNG



中国科学院
CHINESE ACADEMY OF SCIENCES

Conference Information	3
Program Schedule	5
List of Sessions	7
Presentation Abstracts	
Engineering Life	10
Footprints of AI: Models & Concepts for Ecological & Sustainable AI	14
Geoengineering & Climate Modelling	19
High-Throughput Biotechnologies	25
Neuroscience & Complex Systems in Brain-Wide Dynamics Analysis	29
The Quest for Dark Matter	33
Poster Session	
List of Posters	38
Poster Abstracts	40
Details of Participants	83
The Alexander von Humboldt Foundation	142
The Chinese Academy of Sciences	144
Follow-up Program CONNECT	146



About the Sino-German Frontiers of Science Symposium

The Sino-German Frontiers of Science Symposia (SINOGFOS) are a series of interdisciplinary binational conferences which are co-organized by the Chinese Academy of Sciences (CAS) and the Alexander von Humboldt Foundation (AvH). Funding on the German side is provided by the Federal Ministry of Education and Research.

Conferences take place once a year alternately in China and in Germany. Each symposium brings together approximately 60 outstanding scientists from a wide range of disciplines (30 each from China and Germany). The conference format allows for the exchange of ideas across disciplinary as well as national boundaries and, at the same time, provides opportunities for future binational collaborations and networking. The symposium promotes the development of cooperative networks among scientists from both countries. The Alexander von Humboldt Foundation supports such collaborations between participants from China and Germany with its special follow-up program “CONNECT” which allocates residence allowances for working visits in the partner countries for up to 30 days.

The scientific program of the symposium is designed by an organizing committee comprised of six China-based and six Germany-based researchers. The Conference Co-Chairs of the SINOGFOS 2025 symposium are Jiao Li, Chinese Academy of Medical Sciences Beijing, and Frank Schulz, Ruhr University Bochum.

Code of Conduct

The Alexander von Humboldt Foundation requires all attendees, speakers, guests and staff at our conference to agree with the following code of conduct. The Alexander von Humboldt Foundation will enforce this code throughout the entire event. We expect cooperation from all participants to help ensure a safe environment for everybody.

Our conference is dedicated to providing a respectful environment and harassment-free conference experience for everyone, regardless of gender identity and expression, age, sexual orientation, disability, physical appearance, body size, ethnicity, nationality, or religion (or lack thereof). We do not tolerate harassment of participants in any form. Sexual language and imagery is not appropriate for any conference venue, including talks, workshops, receptions, or via any online (social) media. Participants violating these rules may be sanctioned or expelled from the conference at the discretion of the Alexander von Humboldt Foundation. Participants experiencing harassment are encouraged to contact a staff member. Staff can be identified by badges or be contacted via email at matthias.hergenhan@avh.de. Conference staff will be happy to help or assist those experiencing harassment to feel safe for the duration of the conference. We value your attendance.

Conference Venue

The Sino-German Frontiers of Science Symposium 2025 will be held at the

Hotel Mannheimer Hof – Leonardo Limited Edition

Augustaanlage 4-8

68165 Mannheim

The Hotel Mannheimer Hof – Leonardo Limited Edition is located right in the heart of Mannheim, opposite the famous Romanesque water tower and the art nouveau gardens of *Friedrichsplatz*.

For international guests the closest airport is Frankfurt International Airport (FRA). The Humboldt Foundation will arrange shuttle transfers from and to the airport for all Chinese conference attendees upon arrival (April 9/10) and departure (April 13/14).

For guests travelling by train the most convenient way to reach the hotel from Mannheim central station is by bus number RNV 60 (direction *Fernmeldeturm*) to the bus stop *Am Friedrichsplatz*. The hotel can also be reached by a 12-minute walk from the central station.

Throughout the conference period, a block of single hotel rooms has been reserved for all symposium attendees at the Hotel Mannheimer Hof – Leonardo Limited Edition in Mannheim. Room charges for all invited participants will be billed directly to the Alexander von Humboldt Foundation for the duration of the symposium (day of arrival: April 10, 2025 / day of departure: April 13, 2025). To avoid duplicate reservations, please do not contact the hotel directly.

Please note that any additional nights apart from these dates have to be covered by the individual participant. Participants will also be responsible for additional charges, e. g. if you request a double room or have any incidentals, upon check-out.

Costs for meals as indicated in the conference program will be covered by the Alexander von Humboldt Foundation for all participants.

Conference Language

The official conference language is English. It will be used for all printed materials, presentations, and discussions. Please note that the SINOGFOS partner organizations are not responsible for the content of documents and conference materials submitted by the participants.

Photos

Photos taken during the conference may be published as part of the information and public relations work of CAS and AvH. They will not be used for commercial purposes. If you do not agree with the publication of the photos in which you are depicted, you can object by mail to matthias.hergenhan@avh.de until the beginning of the conference.

Exclusion Of Liability

Please understand that the SINOGFOS partner organizations are neither liable for any physical injury or damage to property that may occur during your travels to the meeting site and back home nor during your stay at the meeting site itself.

Thursday, 10 April 2025

5:30 pm - 6:30 pm	Session Preparation Meeting for 2025 Organizers and Speakers
7:00 pm - 7:45 pm	Speed Meeting for All Participants
7:45 pm	Welcome Dinner

Friday, 11 April 2025

7:00 am	Breakfast
9:00 am - 9:15 am	Opening Remarks
9:15 am - 10:45 am	Session I
10:45 am - 11:15 am	Coffee Break & Group Photo
11:15 am - 11:45 am	Presentation of CAS and AvH Funding Programs
11:45 am - 1:00 pm	Poster Flash Talk Presentations
1:00 pm - 2:00 pm	Lunch
2:00 pm - 3:15 pm	Poster Session I: Odd numbers
3:15 pm - 4:30 pm	Poster Session II: Even numbers & Coffee
4:30 pm - 4:45 pm	Break
4:45 pm - 6:15 pm	Session II
7:00 pm	Dinner

Saturday, 12 April 2025

7:00 am	Breakfast
9:00 am - 10:30 am	Session III
10:30 am - 11:00 am	Coffee Break
11:00 am - 12:15 pm	Workshop I: Break out groups by topics
12:15 pm - 1:15 pm	Lunch
1:15 pm - 2:45 pm	Session IV
3:00 pm	Cultural Tour
7:30 pm	Dinner

Sunday, 13 April 2025

7:00 am	Breakfast
9:00 am - 10:30 am	Session V
10:30 am - 11:30 am	Workshop II: Collaboration & Coffee
11:30 am - 1:00 pm	Session VI
1:00 pm - 1:15 pm	Closing Remarks
1:15 pm - 2:15 pm	Farewell Lunch
thereafter	Departure

Engineering Life

ORGANIZERS

Amelie Heuer-Jungemann, TU Dortmund and Research Center One Health Ruhr

Qihua Ling, Center for Excellence in Molecular Plant Sciences, Chinese Academy of Sciences, Shanghai

INTRODUCTORY SPEAKER

Engineering Life – Introductory presentation

Henrike Niederholtmeyer, Technical University of Munich, TUM Campus Straubing for Biotechnology and Sustainability

SPEAKERS

Organoids Offer Window Into the Mechanics of the Retina

Elijah Shelton, Research Group Mechanobiology and Neuronal Networks, University of Munich

Machine Learning-Based Prediction of Antigen-Antibody Mutation Effects for Affinity Maturation

Shao-Qing Zhang, CAS Center for Excellence in Molecular Cell Science, Shanghai

Footprint of AI: Models and Concepts for Ecological and Sustainable AI

ORGANIZERS

Jiao Li, Institute of Medical Information, Chinese Academy of Medical Sciences, Beijing

Myriam Lipprandt, Institute of Medical Informatics, RWTH Aachen University

INTRODUCTORY SPEAKER

Footprint of AI

Ang Li, Institute of Biophysics, Chinese Academy of Sciences Beijing

SPEAKERS

HPC and AI for Geo-Sciences

Lin Gan, Department of Computer Science and Technology, Tsinghua University Beijing

From Data to Sustainability: How Machine Learning Can Optimize the Residential Energy Sector

Konstantin Hopf, Information Systems and Energy Efficient Systems, University of Bamberg

Geoengineering and Climate Modelling

ORGANIZERS

Christian Hallmann, German Research Center for Geosciences (GFZ), Potsdam

Bian He, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing

INTRODUCTORY SPEAKER

Patrick Frings, German Research Center for Geosciences (GFZ), Potsdam

Earth's Natural Homeostasis Mechanisms: Lessons for the Future?

SPEAKERS

The Need for Carbon Dioxide Removal (CDR) Methods, Their Potentials, Risks and Societal Aspects

Felix Havermann, Department of Geography, University of Munich

Light Rain Exacerbates Extreme Humid Heat

Yong Wang, Department of Earth System Science, Tsinghua University Beijing

High-Throughput Biotechnologies

ORGANIZERS

Frank Schulz, Faculty for Chemistry and Biochemistry, Ruhr University Bochum

Luoyi Wang, Institute of Microbiology, Chinese Academy of Sciences Beijing

INTRODUCTORY SPEAKER

Accelerating Microbial Natural Product Discovery Through Biofoundry Automation and AI

Tong Si, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences

SPEAKERS

Novel Avenues in Enzyme and Natural Product Discovery

Lena Barra, Department of Chemistry, University of Konstanz

Discovery of Novel Lipopeptides for MDR Pathogens by Motif Search-Guided Chemical Synthesis

Lei Li, School of Life Sciences and Biotechnology, Shanghai Jiao Tong University

Neuroscience and Complex Systems in Brain-Wide Dynamics Analysis

ORGANIZERS

Yu Mu, Center for Excellence in Brain Science and Intelligence Technology, Chinese Academy of Sciences, Shanghai

Nils R. Winter, Institute of Translational Psychiatry, University of Münster

INTRODUCTORY SPEAKER

Mapping Effective Connectivity by Virtually Perturbing a Surrogate Brain

Quanying Liu, Southern University of Science and Technology, Shenzhen

SPEAKERS

Re-Engineering the Disordered Mind: Perspectives from Dynamical Systems and AI

Hamidreza Jamalabadi, Department of Psychiatry and Psychotherapy, University of Marburg

Uncovering Emergent Dynamics in Brain Networks Through the Criticality Hypothesis and Spiking Neural Networks

Zhengyu Ma, Pengcheng Laboratory Shenzhen

The Quest for Dark Matter

ORGANIZERS

Karoline Schäffner, Max Planck Institute for Physics, Garching

Lirong Wang, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing

INTRODUCTORY SPEAKER

Diving Into the Quest for Dark Matter

Belina von Krosigk, Kirchhoff-Institute for Physics, Heidelberg University

SPEAKERS

Searching for Light Dark Matter With Low-Temperature Detectors

Margarita Kaznacheeva, TUM School of Natural Sciences, Technical University Munich

Dark Matter Search in China Underground Laboratory

Yue Meng, Institute of Nuclear and Particle Physics, Shanghai Jiao Tong University