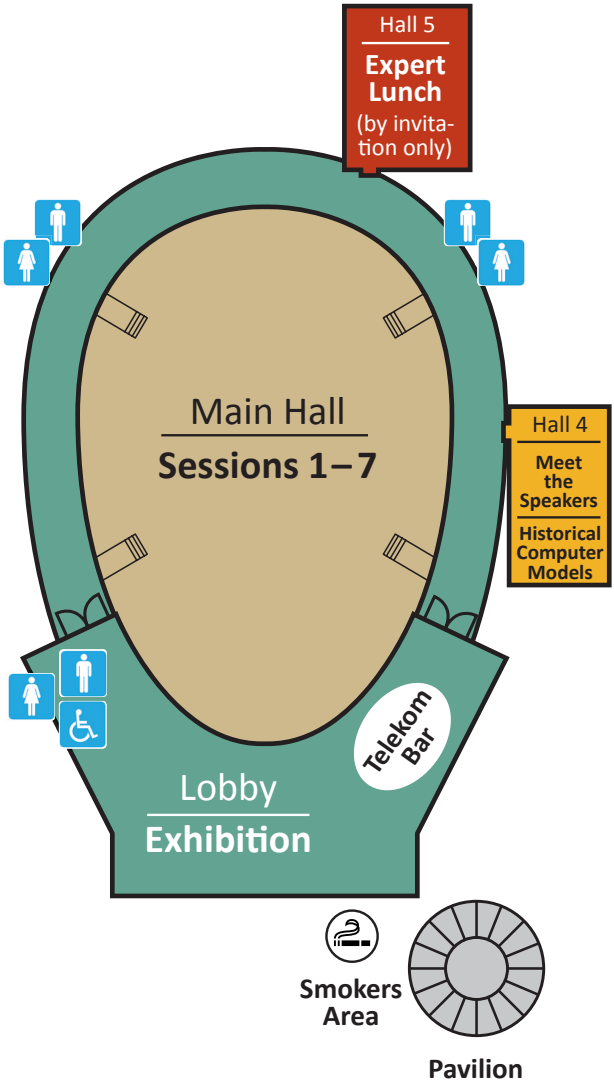
THE DIGITAL FUTURE

ZUSE INSTITUTE BERLIN | TAGESSPIEGEL SCIENCE MATCH

11th May 2016
Kosmos, Berlin

Program and Speakers

Floor Plan



#sciencematch

Wi-Fi
Network: science-match
Password: science-match

Program

Session 1 **10.00 - 11.00 am**
Welcome address, Digital Hall of Fame Award Ceremony
Christof Schütte, Martin Grötschel, Michael Müller, Ed Seidel, Tony Hey

Matching Break **11.00 - 11.30 am**
Exhibition | Meet the Speakers

Session 2 **11.30 am - 12.30 pm**
Simulation, Optimization, Visualization
Michele Parrinello, Siegfried Raasch, Rolf Krause, Christian Hege, Michael Dellnitz, Yannis Kevrekidis

Matching Lunch **12.30 - 1.30 pm**
Exhibition | Meet the Speakers
Expert Lunch (by invitation only)

Session 3 **1.30 - 2.25 pm**
Networks and Mobility
Johann Jungwirth, Jennifer Chayes, Jochen Schiller, Tinosch Ganjineh, Alexander Martin, Stephan Kamphues, Anja Feldmann, Leo Kroon

Session 4 **2.25 - 3.20 pm**
The Future of Computing
Steve Oberlin, Thomas Lippert, Frank Noé, Jens Eisert, Steve Scott

Matching Break **3.20 - 4.00 pm**
Exhibition | Meet the Speakers

Session 5 **4.00 - 4.30 pm**
Peter Altmaier, Horst Zuse

Session 6 **4.30 - 5.30 pm**
Data Analysis, Big Data, Security/Privacy
Olaf Acker, Leslie Greengard, Wolfgang Hiller, Volker Lindenstruth, Klaus-Robert Müller, Volker Markl, Ralf Herbrich, Nick Robinson, Fred Hamprecht

Matching Break **5.30 - 6.00 pm**
Exhibition | Meet the Speakers

Session 7 **6.00 - 7.00 pm**
Communication, Digital Society, Gaming
Thomas Wiegand, Wolfgang Coy, Gesche Joost, Thomas Langhanki, Jonathan Schaeffer

Get together **7.00 pm**

Program and Speakers

9:00 am Entrance

10:00 – 11:00 am Session 1

Welcome Address
Christof Schütte, President, Zuse Institute Berlin

Martin Grötschel, President, Berlin-Brandenburg Academy of Sciences and Humanities

Keynote and Digital Hall of Fame Award Ceremony
Michael Müller, The Governing Mayor of Berlin
Von Zuse bis 3D-Druck – Berlin als Ort von Inspiration und Innovation

Keynote
Ed Seidel, Director of the National Center for Supercomputing Applications, and Professor of Physics based at the University of Illinois at Urbana-Champaign and Distinguished Researcher in High-Performance Computing, Relativity and Astrophysics
The Impact of the Computing and Data Revolution on Science and Society

Keynote
Tony Hey, Chief Data Scientist of the Science and Technology Facilities Council of the UK
The Fourth Paradigm: Data-Intensive Scientific Discovery

11:00 – 11:30 am Matching Break with Exhibition and Meet the Speakers

11:30 am – 12:30 pm Session 2: Simulation, Optimization, Visualization

Keynote
Michele Parrinello, Professor in Computational Sciences at ETH Zurich and at the University of Lugana
From Atoms to Computers and Back

Short Plenary Presentations

1. **Siegfried Raasch**, Professor at the Institute of Meteorology and Climatology of the Leibniz University Hanover
Turbulence - At the Cutting Edge of Meteorological Simulations

2. **Rolf Krause**, Director of Institute of Computational Science, Co-Director of the Center for Computational Medicine in Cardiology and Chair of Advanced Scientific Computing at the University of Lugano
Multiphysics in Cardiac Simulation: From Patient Data to ECGs

3. **Christian Hege**, Head of the Department of Visual Data Analysis at Zuse Institute Berlin
Visualization: From Leonardo da Vinci's Sketches to Virtual Reality

4. **Michael Dellnitz**, Chair of Applied Mathematics and Director of the Institute for Industrial Mathematics at University of Paderborn
Algorithms for Energy Efficient Autonomous Driving

Keynote
Yannis Kevrekidis, Pomeroy and Betty Perry Smith Professor of Engineering and Professor of Chemical and Biological Engineering at Princeton University, Senior Faculty Member of the Program in Applied and Computational Mathematics, and Associate Faculty in Mathematics
No Equations, No Variables, No Parameters

12:30 – 1:30 pm **Matching Lunch with Exhibition and Meet the Speakers**
Expert Lunch (by invitation only)

1:30 – 2:25 pm **Session 3: Networks and Mobility**

Introduction Keynote
Johann Jungwirth, Chief Digital Officer, Volkswagen AG
The Reinvention of Mobility

Keynote
Jennifer Chayes, Distinguished Scientist and Managing Director, Microsoft Research New England and Microsoft Research New York City
A Personal View of Network Science: Promises and Perils

Short Plenary Presentations

1. **Jochen Schiller**, Chair of Computer Systems and Telematics and Chief Information Officer at Freie Universität Berlin
Can we Control the Complexity of our Networks?

2. **Tinosch Ganjineh**, Chief Exective Officer of AutoNOMOS GmbH
The Car of the Future

3. **Alexander Martin**, Chair of Economy, Discrete Optimization and Mathematics at the University of Erlangen-Nürnberg
Progress and Challenges in Network Optimization

4. **Stephan Kamphues**, Chief Executive Officer of Open Grid Europe GmbH
First an Idea, then a Revolution

5. **Anja Feldmann**, Chair of Internet Network Architectures at Technische Universität Berlin
Evolution of Internet Traffic and Topology

6. **Leo Kroon**, Professor of Quantitative Logistics at the Rotterdam School of Management of the Erasmus Univerity of Rotterdam
Public Transport in the Digital World

2:25 – 3:20 pm Session 4: The Future of Computing

Keynote
Steve Oberlin, Chief Technology Officer, Accelerated Computing for NVIDIA
Accelerating Understanding: Machine Learning, Intelligent Applications and GPUs

Short Plenary Presentations

1. **Thomas Lippert**, Director of the Institute for Advanced Simulation and Head of Jülich Supercomputing Centre
Simulation and Data Sciences in the Exascale, Neuromorphic and Quantum Computing Era

2. **Frank Noé**, Chair of Computational Molecular Biology at Freie Universität Berlin
Understanding the Building Blocks of Life with Supercomputing

3. **Jens Eisert**, Chair of the Dahlem Center for Complex Quantum Systems of Freie Universität Berlin
The Second Quantum Revolution: From Unconditionally Secure Communication to New Modes of Computation

Keynote
Steve Scott, Senior Vice President and Chief Technology Officer of Cray Inc.
Supercomputing Technologies and Trends: Where do we go from here?

3:20 – 4:00 pm Matching Break with Exhibition and Meet the Speakers

4:00 - 4:30 pm Session 5

Keynote
Peter Altmaier, Head of the Federal Chancellery and Federal Minister of Special Tasks
Adressing the Challenge: „What Government Needs to Do“

Historical Keynote
Horst Zuse, Professor at the Univetsity of Applied Sciences Lausitz

4:30 – 5:30 pm Session 6: Data Analysis, Big Data and Security/Privacy

Introduction
Olaf Acker, EMEA Digital Services Leader, PricewaterhouseCoopers (PwC)
Industry 4.0 – Building the Digital Enterprise with Secure Data at its Core

Keynote
Leslie Greengard, Founding Director of the Simons Center for Data Analysis and Professor of Mathematics at the Courant Institute of New York University
Modeling Physical Systems in Complex Geometry

Short Plenary Presentations

1. **Wolfgang Hiller**, Director of the Computer Center of the Alfred-Wegener-Institute
Tsunami Scenarios for Indonesia

2. **Volker Lindenstruth**, Chair of High Performance Computing Architecture at the Goethe Universität Frankfurt am Main
Quarks and Bytes

3. **Klaus-Robert Müller**, Chair of the Machine Learning Department of Technische Universität Berlin and distinguished Professor at Korea University in Seoul
Machine Learning and Applications

4. **Volker Markl**, Full Professor and Chair of the Database Systems and Information Management Group at the Technische Universität Berlin, Director of the Berlin Big Data Center, Director of the Intelligent Analytics for Massive Data Research Group at the German Research Center for Artificial Intelligence and Adjunct Full Professor at the University of Toronto
Smart Data – Bridging The Talent Gap

5. **Ralf Herbrich**, Managing Director of the Amazon Development Center Germany
Demystifying Big Data: From Statistics to Machine Learning and AI

6. **Nick Robinson**, Professor of Medical Genomics, Professor of Bioinformatics, Freie Universität Berlin, Head of Computational Biology Group at the University Hospital Charité
Big Clinical Data: New Opportunities and Challenges for Precision Medicine

7. **Fred Hamprecht**, Robert-Bosch endowed Professor for Image Analysis and Learning at the Interdisciplinary Center for Scientific Computing and the Department of Physics of Universität Heidelberg
Interactive Machine Learning for Computer Vision

5:30 – 6:00 pm Matching Break with Exhibition and Meet the Speakers

6:00 – 7:00 pm **Session 7: Communication, Digital Society and Gaming**

Keynote

Thomas Wiegand, Executive Director of the Fraunhofer Heinrich-Hertz-Institute and Professor for Image Communication at Technische Universität Berlin
Digital Communication & Processing

Short Plenary Presentations

1. **Wolfgang Coy**, Senior Advisor and Senior Professor of the Humboldt-Universität zu Berlin
Save or Delete? Long-Term Preservation of Digital Artifacts

2. **Gesche Joost**, Head of the Design Research Lab of the Berlin University of the Arts
DIY Computing

3. **Thomas Langhanki**, Professor at the Media Design University and Chief Executive Officer of Gamebook Technologies
All Hands on Deck: From Consumer to Creator

Keynote

Jonathan Schaeffer, Distinguished University Professor in Artificial Intelligence at the University of Alberta
The Games Computers (and Humans) Play

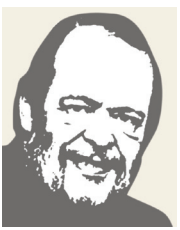
7:00 pm **Get together**

Speakers

Olaf Acker
EMEA Digital Services Leader,
PricewaterhouseCoopers (PwC)

Peter Altmaier (Keynote)
The Chief of Staff of Chancellor Angela Merkel coordinates the work of all ministries of the German Federal Government.

Jennifer Chayes (Keynote)
(Managing Director of Microsoft Research New England in Cambridge and in New York City) is one of the world's experts in random, dynamically growing graphs used to model the Internet, the World Wide Web, social networks, and networks in computational biology.



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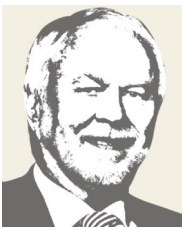
Tinosch Ganjineh
Chief Exective Officer of AutoNOMOS GmbH

Leslie Greengard (Keynote)
(Courant Institute, NYU and Founding Director, Simons Center for Data Analysis) is an American mathematician, physician and computer scientist. He is co-inventor of the fast multipole method, recognized as one of the top-ten algorithms of computing.



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Christian Hege
Head of the Department of Visual Data Analysis at Zuse Institute Berlin

Ralf Herbrich
Managing Director of the Amazon Development Center Germany

Tony Hey (Keynote)
(Chief Data Scientist, Science and Technology Facilities Council) is an English physicist known as one of the prophets of data-intensive scientific discovery. He co-invented the Message Passing Interface (MPI) which became a de facto open standard for parallel scientific computing.

Wolfgang Hiller
Director of the Computer Center of the Alfred-Wegener-Institute

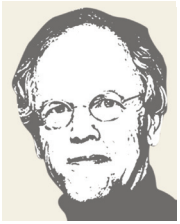
Gesche Joost
Head of the Design Research Lab of the Berlin University of the Arts

Johann Jungwirth
Chief Digital Officer of Volkswagen AG

Stephan Kamphues
Chief Executive Officer of Open Grid Europe GmbH

Yannis Kevrekidis (Keynote)
(Princeton University) is a Greek mathematician and chemical engineer.
He invented the equation-free concept in scientific computation for complex systems and is now revolutionizing data science.

Rolf Krause
Director of Institute of Computational Science, Co-Director of the Center for Computational Medicine in Cardiology and Chair of Advanced Scientific Computing at the University of Lugano



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Full Professor and Chair of the Database Systems and Information Management Group at the Technische Universität Berlin, Director of the Berlin Big Data Center, Director of the Intelligent Analytics for Massive Data Research Group at the German Research Center for Artificial Intelligence and Adjunct Full Professor at the University of Toronto

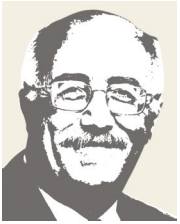
Alexander Martin
Chair of Economy, Discrete Optimization and Mathematics at the University of Erlangen-Nürnberg

Michael Müller (Keynote)
The Governing Mayor of Berlin is presiding over the senate of Germany's capital.

Klaus-Robert Müller
Chair of the Machine Learning Department of Technische Universität Berlin and distinguished Professor at Korea University in Seoul

Frank Noé
Chair of Computational Molecular Biology at Freie Universität Berlin

Steve Oberlin (Keynote)
(Chief Technology Officer, NVIDIA) is an evangelist for massively parallel processing. He directed the early architecture research leading to the launch of Cray's MPP project, was the chief architect of the Cray's parallel supercomputer systems, and is now CTO for NVIDIAs Tesla GPU roadmap.



Michele Parrinello (Keynote)
(ETH Zürich / USI Lugano) is an Italian physicist. He co-invented the Car-Parrinello method that revolutionized molecular dynamics and famous for his citation impact index which is one of the highest among all scientists.

Siegfried Raasch
Professor at the Institute of Meteorology and Climatology of the Leibniz University Hanover

Nick Robinson
Professor of Medical Genomics, Professor of Bioinformatics, Freie Universität Berlin, Head of Computational Biology Group at the University Hospital Charité

Jonathan Schaeffer (Keynote)
(Distinguished University Professor in Artificial Intelligence at the University of Alberta) is known for his construction of the first computer program to win the world champion title in a competition against humans (checkers). He is now developing intelligent computer poker systems.

Jochen Schiller
Chair of Computer Systems and Telematics and Chief Information Officer at Freie Universität Berlin

Steve Scott (Keynote)
(Senior Vice President and Chief Technology Officer, Cray Inc.) is guiding the roadmap in high-performance computing, storage and big data analytics. He was Chief Architect of several generations of parallel vector and massively parallel supercomputer systems and interconnects at Cray.

Christof Schütte
President, Zuse Institute Berlin, Chair of Scientific Computing, Freie Universität Berlin

Ed Seidel (Keynote)
(Director of the National Center for Supercomputing Applications) is a distinguished researcher in high-performance computing and acts as the director of the National Center for Supercomputing Applications (NCSA) in the US.

Thomas Wiegand (Keynote)
(TU Berlin, Executive Director of Fraunhofer Heinrich-Hertz-Institute) is a German electrical engineer, best known as the main contributor to the MPEG video coding and multimedia transmission standards.

Horst Zuse
is the son of the computer pioneer Konrad Zuse and a German computer scientist. He worked as a professor in Germany and the United States. Besides software engineering he concentrated on the history of computer science.

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