

**9th Bethe Center Workshop  
„Computational Sciences and Reality“  
October 2-6, 2017**

**Program**

Duration of talks is 35+10 min. (please check your allotted time)

**Monday, October 2<sup>nd</sup>, 2017**

Time	Speaker	Title
	Chairperson	tbd
12:00	Lunch	
13:45 – 14:00	U.-G. Meißner (Bonn)	Welcome
14:00 – 14:45	F. Neese (Mülheim)	Some thoughts on how to best marry theory and experiment in chemistry
14:45 – 15:30	M. Gabriel (Bonn)	Physics, Metaphysics, Metametaphysics
15:30 – 16:00	Break	
16:00 – 16:45	E. Seiler (München)	Producing real answers by complexification
16:45 – 17:30	S. Mukherjee (Bonn)	Towards scalable causal discovery
17:30 – 18:15	R. Memmesheimer (Bonn)	Bridging the scales: From single neuron properties to brain region dynamics and computation
18:15	Dinner	

**There is no program on Tuesday, October 3<sup>rd</sup>.**

### Wednesday, October 4<sup>th</sup>, 2017

Time	Speaker	Title
	Chairperson	tbd
09:15 – 10:00	M. Kramer (Bonn)	Confronting theory with data: from Petabytes to insight
10:00 – 10:45	S. Wetzel (Heidelberg)	Exploring Phase Diagrams with Artificial Neural Networks
10:45 – 11:15	Break	
11:15 – 12:00	U.-J. Wiese (Bern)	Quantum Simulation of Abelian and non-Abelian Gauge Theories
12:00 – 12:45	M. Reuter (Bonn)	Computational Neuroimaging
12:45 – 14:00	Lunch	
	Chairperson	tbd
14:00 – 14:45	B. Stamm (Aachen)	Facing complexity by multi-scale models: the example of implicit solvation models in computational chemistry from a mathematical perspective
14:45 – 15:30	K. Kahl (Wuppertal)	Adaptive algebraic multigrid for lattice QCD applications
15:30 – 16:00	Break	
16:00 – 16:45	S. Anderl (Frankfurt)	Astrophysical modelling and the interpretation of observations – The role of simplification
16:45 – 17:30	A. Elliott-Graves (Helsinki)	When and how do general models apply to the world?
18:00	Dinner	

## Thursday, October 5<sup>th</sup>, 2017

Time	Speaker	Title
	Chairperson	tbd
9:15 – 10:00	T. Wettig (Regensburg)	High-performance computing in precision medicine
10:00 – 10:45	E. Suarez (Jülich)	Modular Supercomputing: an overview of computing architecture evolution at JSC
10:45 – 11:15	Break	
11:15 – 12:00	T. Luu (Jülich)	Monte Carlo methods for materials
12:00 – 12:45	J. Behler (Göttingen)	Simulation of complex chemical systems using neural network potentials
12:45 – 14:00	Lunch	
	Chairperson	tbd
14:00 – 14:45	W. Detmold (Cambridge)	From Quarks to Nuclei: The Emergence of Complexity
14_45 – 15:30	Z. Fodor (Wuppertal)	Calculation of the axion mass based on lattice quantum chromodynamics
15:30 – 16:00	Break	
16:00 – 16:45	A. Alexandru (Washington)	Searching the complex plane for a solution to the sign problem
16:45 – 17:30	J. Rometsch (Bonn)	Knowledge acquisition and computation
18:00	Dinner	

**Friday, October 6<sup>th</sup>, 2017**

Time	Speaker	Title
	Chairperson	tbd
9:15 – 10:00	A. Isaacs (Edinburgh)	Cognition as Analog Computation: Responding to the “Mere Model” Challenge
10:00 – 10:45	A. Longo (Paris)	Gaston Bachelard: from mathematical structures to the production of reality
10:45 – 11:15	Break	
11:15 – 12:00	Jo Wolff (London)	Can computer simulations be measurements?
12:00 – 12:15	C. Urbach (Bonn)	Farewell
12:15	Lunch	