

**Invited Speakers**

- **Karsten M. Borgwardt**  
ETH Zurich, Switzerland
- **Magnus Fontes**  
University Lund, Sweden and Institut Pasteur,  
Paris, France
- **Yvon Maday**  
Université Pierre et Marie Curie, Paris, France
- **Boaz Nadler**  
Weizmann Institute of Science, Rehovot, Israel
- **Justin Keith Romberg**  
Georgia Institute of Technology, Atlanta, USA

**Chairs**

- **Karl-Heinz Küfer**  
Fraunhofer ITWM
- **Helmut Neunzert**  
Fraunhofer ITWM

**Venue**

Auditorium at Fraunhofer Institute for Industrial  
Mathematics ITWM

Fraunhofer-Platz 1  
67663 Kaiserslautern

**Participation**

Everybody interested in the subjects is cordially  
invited to the lectures. Registration is not required.  
Admission free.

Participation of the closed sessions by personal  
invitation only.

**Contact**

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## Felix Klein Conference

# Mathematical Methods in Big Data

September 28<sup>th</sup> - 30<sup>th</sup>, 2016

Fraunhofer Institute for Industrial Mathematics ITWM  
Fraunhofer-Platz 1, Kaiserslautern



**FELIX KLEIN**  
ZENTRUM FÜR  
MATHEMATIK

## PREFACE

Dear colleagues and students,

in the recent decades structuring and analysis of big data has become a challenging and emerging field of research in mathematics and the computer science.

Fraunhofer ITWM and the Department of Mathematics at TU Kaiserslautern are interested to learn more about the state of art of mathematics applied to big data. Therefore, the Felix Klein Academy at Kaiserslautern has invited 5 internationally renowned speakers for a lecture series, which has open access to all interested scientists and students. During the afternoon sessions scientists from Kaiserslautern will present interesting applications and discuss these with the experts, in closed sessions.

We are looking forward to this unique opportunity and hope for interesting insights and fruitful discussions.



Karl-Heinz Küfer



Helmut Neunzert

## PROGRAM

Wednesday, September 28 <sup>th</sup>		
10:00	Opening words by Helmut Neunzert	public lectures
10:30	<b>Reduced basis approaches for data assimilation and data mining, Part I</b> Yvon Maday	
11:15	<b>Reduced basis approaches for data assimilation and data mining, Part II</b> Yvon Maday	
12:00	Lunch	
13:00	<b>Closed invited sessions</b>	
16:00	Social event (only with personal invitation)	
Thursday, September 29 <sup>th</sup>		
9:00	<b>Unsupervised Ensemble Learning: How to make good decisions when knowing (almost) nothing</b> Boaz Nadler	public lectures
9:45	<b>Some statistical and computational challenges related to big data</b> Boaz Nadler	
10:30	Coffee break	
11:00	<b>Modeling and Computation for Precision medicine, Part I</b> Magnus Fontes	
11:45	<b>Modeling and Computation for Precision medicine, Part II</b> Magnus Fontes	
12:30	Lunch	
13:30	<b>Closed invited sessions</b>	
Friday, September 30 <sup>th</sup>		
9:00	<b>Machine Learning for Personalized Medicine</b> Karsten M. Borgwardt	public lectures
9:45	<b>Significant Pattern Mining</b> Karsten M. Borgwardt	
10:30	Coffee break	
11:00	<b>Streaming reconstruction: least-squares and L1</b> Justin Keith Romberg	
11:45	<b>Solving Underdetermined Systems of Linear Equations and Overdetermined Systems of Quadratic Equations</b> Justin Keith Romberg	
12:30	Lunch	