

## LOCATION

Veranstaltungszentrum Ruhr University Bochum  
Universitätsstraße 150 – 44801 Bochum



The Ruhr University Bochum is connected by metro line U35 with the city centre and the main station of Bochum. Bochum is easily reachable from the airport Düsseldorf, Cologne-Bonn and Dortmund by public transport.

To reach the Veranstaltungszentrum from the metro station "Ruhr-Universität" turn right towards the University Campus. Then pass the library and the Audi-max on the right hand side. You are now directly facing the Mensa/Cafeteria building. Enter the building and take the elevator to floor number 04.

If you arrive by car take the exit "Uni-Mitte" and choose the parking site P9 and take the elevator to floor number 04.

## SFB COORDINATOR

Prof. Dr. Günther Meschke

## PROJECT LEADERS

### Faculty of Civil and Environmental Engineering

Dr. M. Baitsch (*Computing in Engineering*)  
 Prof. Dr. R. Breitenbücher\* (*Building Materials*)  
 Prof. Dr. K. Hackl (*Mechanics of Materials*)  
 Prof. Dr. D. Hartmann\* (*Computing in Engineering*)  
 Prof. Dr. M. König (*Computing in Engineering*)  
 Prof. Dr. P. Mark (*Concrete Structures*)  
 Prof. Dr. G. Meschke\* (*Structural Mechanics*)  
 Prof. Dr. T. Nestorović (*Mechanics of Adaptive Systems*)  
 Prof. Dr. T. Schanz\* (*Foundation Engineering, Soil & Rock Mechanics*)  
 Prof. Dr. H. Steeb (*Continuum Mechanics*)  
 Prof. Dr. M. Thewes\* (*Tunneling and Construction Management*)

### Faculty of Geosciences

Prof. Dr. M. Alber (*Engineering Geology & Rock Engineering*)  
 Prof. Dr. W. Friederich (*Geophysics*)

\*Members of the Executive Board

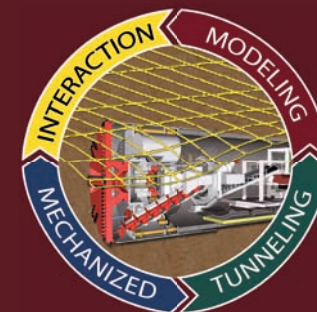
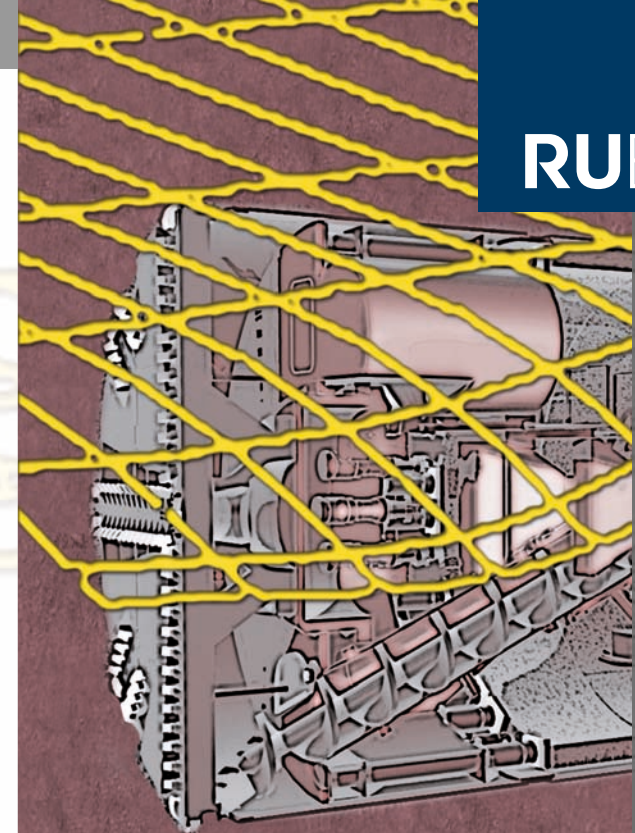
## RUHR UNIVERSITY BOCHUM

### SFB 837 - Interaction Modeling in Mechanized Tunneling

Assistant to the Coordinator: Dipl.-Ing. Jörg Sahlmen

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## SFB 837 – PROJECT OBJECTIVES

Mechanized tunneling is an established flexible and efficient technology for the construction of underground infrastructure, characterized by a dynamic advancement of tunnel boring technologies, increasing diameters and a broadening range of applicability. This rapid development in association with the inherent heterogeneity of the ground poses new challenges to prognosis models.

Considering this background, the subject of the new Collaborative Research Center SFB 837 "Interaction models for mechanized tunneling" is the research and development of models, methods and design concepts, which, when adequately interlinked, can deal with the manifold complex interactions of the components and processes involved in mechanized tunneling.

Research within the four project areas of the SFB includes the ground exploration and modeling of the ground, the tunnel boring machine, the lining and annular gap grouting, and the interactions between tunneling and existing structures. Furthermore, the cutting, advancement and logistics processes will be represented using adequate models integrated by means of a consistent SFB-wide information management system.



## SFB 837 – GUEST LECTURES

The present workshop is part of a series of guest lectures and seminars. This SFB series shall offer the opportunity for an active dialog between members of the SFB 837 and internationally recognized scientists as well as experts from industry and design offices. All topics involved in the SFB 837, ranging from computational multiscale methods to TBM technologies, are covered.

Guests are sincerely welcome!



## COMPUTATIONAL MODELING IN GEOMECHANICS AND TUNNELING

### INTERNATIONAL WORKSHOP – 07. - 08. JULY

at Veranstaltungszentrum Ruhr University Bochum

The workshop will address recent advances in computational modeling of soft soils and of interactions between the ground behaviour and machine-driven tunnel construction.

#### Invited Guest Lecturers:

- **Prof. Ronaldo Borja**  
*(Stanford University, USA)*
- **Prof. Carlo Callari**  
*(University of Molise, Italy)*
- **Prof. Antonio Gens**  
*(Universitat Politècnica de Catalunya, Spain)*
- **Prof. Kenichi Soga**  
*(University of Cambridge, UK)*
- **Prof. em. Pieter Vermeer**  
*(University Stuttgart, Germany)*
- **Prof. Andrew Whittle**  
*(Massachusetts Institute of Technology, USA)*

### WORKSHOP PROGRAM

07. July 2011 – 13:30 - 18:00

#### Analysis of Tunneling in London Clay Using an Advanced Model

Prof. Antonio Gens (Universitat Politècnica de Catalunya, Spain)

#### Mathematical Formulation, Finite Element Implementation, and Iterative Solvers for Fully Coupled Flow and Geomechanics

Prof. Ronaldo Borja (Stanford University, USA)

- Break -

#### Ground Movements Associated with Tunneling and their Effects on Adjacent Structures

Prof. Andrew Whittle (Massachusetts Institute of Technology, USA)



## COMPUTATIONAL MODELING IN GEOMECHANICS AND TUNNELING

### WORKSHOP PROGRAM

07. July 2011 – 13:30 - 18:00

#### Analysis of Tunnel Failure in Partially Saturated Grounds using Non-Standard Finite Element Methods

Prof. Carlo Callari (University of Molise, Italy)

#### Interaction Modeling in Mechanized Tunneling

Prof. Günther Meschke (Ruhr University Bochum, Germany)

19:00 – Workshop Dinner

### WORKSHOP PROGRAM

08. July 2011 – 09:00 - 13:30

#### Numerical Modeling of Small to Large Deformation Geomechanics Problems

Prof. Kenichi Soga (University of Cambridge, UK)

#### Large Deformation Analyses with the Material Point Method

Prof. em. Pieter Vermeer (University Stuttgart, Germany)

- Break -

#### Validation of Constitutive Models in Geotechnical Applications

Prof. Tom Schanz (Ruhr University Bochum, Germany)

#### Infiltration Processes in Porous Media: Multi-Scale and Multi-Phase Modeling Aspects

Prof. Holger Steeb (Ruhr University Bochum, Germany)



## REGISTRATION

The registration fee for non-SFB-Members is € 50,-. For registration please visit the workshop webpage: [www.rub.de/sfb837](http://www.rub.de/sfb837).