

第七届 NPU-UTC 中法“虚拟样机设计  
与制造技术”学术研讨会  
VII NPU-UTC Sino-French Seminar  
on  
"Virtual Prototyping for Design and  
Fabrication"



**April 11-15, 2016**

**1<sup>st</sup> International Meeting Room, Old Campus,  
Northwestern Polytechnical University,  
Xi'an, P.R. China**



## **Members of China**

<i>Prof. Jihong Zhu</i>	<i>ESAC, NPU</i>
<i>Prof. Ming Wan</i>	<i>ESAC, NPU</i>
<i>Prof. Fuli Zhang</i>	<i>School of Science, NPU</i>
<i>Ass. Prof. Manyu Xiao</i>	<i>School of Science, NPU</i>
<i>Ass. Prof. Kepeng Qiu</i>	<i>ESAC, NPU</i>
<i>Ass. Prof. Tong Gao</i>	<i>ESAC, NPU</i>
<i>Ass. Prof. Yingjie Xu</i>	<i>ESAC, NPU</i>
<i>Ass. Prof. Dan Wang</i>	<i>ESAC, NPU</i>

## **Invited Professors**

*Prof. Sofiane Guessasma*  
*Unité de Recherche Biopolymères, Interactions, Assemblages*

# Seminar Schedule

**11 April, 2016 (国际会议中心 第一会议室)**

<p>Opening Ceremony 开幕式 9:00-9:10</p>	<p>Welcome speech and ESCA/NPU introduction</p> <ul style="list-style-type: none"> <li>● <i>Prof. Weihong ZHANG</i> NPU</li> </ul> <p>UTC and Roberval laboratory introduction</p> <ul style="list-style-type: none"> <li>● <i>Prof. Piotr BREITKOPF</i> UTC</li> </ul>
<p><b>9:10-9:15</b>      <i>Photo</i></p>	
<p>Keynote Presentations 主题报告 9:15-10:00 10:00-10:30</p>	<p><b>Chairman: Prof. Weihong ZHANG</b></p> <ul style="list-style-type: none"> <li>● <i>Prof. Piotr BREITKOPF</i> UTC</li> </ul> <p>Machine learning: a new paradigm for computational mechanics</p> <ul style="list-style-type: none"> <li>● <i>Prof. Jihong ZHU</i> NPU</li> </ul> <p>Topologyoptimization and its application</p>
<p><b>10:30-10:45</b>      <i>Coffee /Tea break</i> 咖啡、茶歇</p>	
<p>Keynote Presentations 主题报告 10:45-11:30 11:30-12:00</p>	<p><b>Chairman: Prof. Piotr BREITKOPF</b></p> <ul style="list-style-type: none"> <li>● <i>Prof. Abderrahmane HABBAL</i> UNSA</li> </ul> <p>Pareto optimality and game equilibria, two approaches to solve multiobjective optimization</p> <ul style="list-style-type: none"> <li>● <i>Prof. Fuli ZHANG</i> NPU</li> </ul> <p>FlexibleMetamaterialsand Application</p>
<p><b>12:00-14:00</b>      <i>午餐/lunch</i></p>	
<p><b>Technical Presentations</b></p>	
<p>14:00-14:30</p>	<p><b>Chairman: Prof. Abderrahmane HABBAL</b></p> <ul style="list-style-type: none"> <li>● <i>Prof. Catherine VAYSSADE</i> UTC</li> </ul> <p>Approximation methods for robust optimization of truss structures</p>

14:30-15:00	<ul style="list-style-type: none"> <li>● <i>Ass. Prof.</i> Dan WANG NPU</li> </ul>
15:00-15:30	<p>Buckling analysis and optimization of grid stiffened composite structures</p> <ul style="list-style-type: none"> <li>● <i>Ass. Prof.</i> Yingjie XU NPU</li> </ul> <p>Modeling study of the process-affected mechanical behavior of polycarbonate</p>
<b>15:30-15:45 Coffee/Tea break 咖啡、茶歇</b>	
15:45-16:15	<p><b>Chairman: Prof. Catherine VAYSSADE</b></p> <ul style="list-style-type: none"> <li>● <i>Ass. Prof.</i> Guénhaël Le QUILLIEC EPUT</li> </ul> <p>Optimization by Shape Manifold Based on Level Set Interpolation Applied to Deep Drawing Applications</p>
16:15-16:45	<ul style="list-style-type: none"> <li>● <i>Prof.</i> Sofiane GUESSASMA INRA</li> </ul> <p>Challenges of additive manufacturing technologies from an optimization perspective</p>
16:45-17:15	<ul style="list-style-type: none"> <li>● <i>PhD</i> Anna MADEA UTC</li> </ul> <p>X-ray microtomography applications for optimization of composite materials mechanical properties</p>

## 12 April, 2016 (国际会议中心 第一会议室)

<b>Technical Presentations</b>	
9:00-9:30	<p><b>Chairman: Prof. Jihong ZHU</b></p> <ul style="list-style-type: none"> <li>● <i>Ass.Prof.</i> Tong GAO NPU</li> </ul> <p>Topology optimization of thermo-elastic structures</p>
9:30-10:00	<ul style="list-style-type: none"> <li>● <i>Ass.Prof.</i> Manyu XIAO NPU</li> </ul> <p>Structural Optimization with Categorical Variables Using Manifold Learning Approach</p>
10:00-10:30	<ul style="list-style-type: none"> <li>● <i>PhD</i> Liang MENG UTC</li> </ul> <p>Identification of hardening properties with indentation test and shape manifold learning approach</p>

<b>10:30-10:45</b> <i>Coffee/Tea break</i> 咖啡、茶歇	
10:45-11:15	<ul style="list-style-type: none"> <li>● <i>PhD</i> Yin ZHOU      NPU</li> </ul> Feature-driven structural topology optimization with signed distance function
11:15-11:45	<ul style="list-style-type: none"> <li>● <i>PhD</i> Qiangqiang HUANG      NPU</li> </ul> Unification of parametric and implicit methods for shape sensitivity analysis and optimization with fixed mesh
<b>11:45-14:00</b> 午餐/lunch	
14:30-16:30	Visiting ESAC lab

**13 April, 2016**    --- free discussion in ESAC lab

**14 April, 2016 (No. 214 Meeting Room of School of Science)**

9:00-10:00	<ul style="list-style-type: none"> <li>● Take a school bus to the New Campus</li> </ul>
10:00-12:30	<ul style="list-style-type: none"> <li>● Presentations from 5 experts</li> </ul>
<b>12:30-14:30</b> 午餐/lunch	
14:30-15:30	<ul style="list-style-type: none"> <li>● Discussion about the Masters' research with <i>Ass. Prof. Manyu XIAO</i></li> </ul>
15:30-16:30	<ul style="list-style-type: none"> <li>● Explore a cooperation on 'Optimization algorithm with mixed variables'</li> </ul>
16:30-17:30:	<ul style="list-style-type: none"> <li>● Take back a school bus to the Old Campus</li> </ul>

**15 April, 2016**    --- free discussion

**Piotr Breitkopf** is the head of the Multidisciplinary Design Optimization team at Université de Technologie de Compiègne (UTC), France. His research fields involve: computational mechanics, reduced order modeling, design optimization and high performance computing. He has obtained his PhD from Polish Academy of Sciences in 1988, and habilitation (HDR) from UTC in 1998. Since 2010 he is Deputy Director of Roberval Laboratory, a joint CNRS-UTC research unit. He is member of the steering committee of Labex MS2T. In 2014 he was nominated Oversea Expert of the Center for Foreign Talents Introduction and Academic Exchange of Mechanical Behavior of Advanced Structures and Materials at NPU. Together with Professor Zhang Weihong he presides the joint French-Chinese research group "Virtual Prototyping and Design". He serves at various editorial boards, scientific councils and scientific associations. He has authored and co-authored more than 200 peer reviewed journal papers, book chapters and referenced conference papers.

**Catherine KNOFF-LENOIR** is senior CNRS research engineer at the Roberval Laboratory of Mechanics at the University of Technology of Compiègne (France). After a PHD in the field of optimization and identification of material parameters, she participated in the development of one of the first French finite element softwares « Mosaic ». Her research work focused on several aspects of optimization in Mechanics: use of continuous gradient methods for sensitivity analysis, efficient approaches for shape and processes optimization and development of simplified models for estimating the variability of the objective or constraint functions with respect to the variability of design variables to get robust solutions. She is member of the Computational Mechanics Association (CSMA) and of the board of the UNIT Foundation (Numerical University in Engineering and Technology), which associates 70 french universities and engineering schools to promote the use and the development of free online courses.

**Abderrahmane HABBAL** has defended his Ph.D. thesis on Non-differentiable shape optimization of shell structures, University of Nice, 1990. Then, he spent two years as developer and Project Manager in software industry. From 1992, He is Associate Professor at the Polyptych Engineering School of University Nice Sophia Antipolis. He is a regular member of the Jean-Alexandre Dieudonné Mathematics Laboratory and permanent researcher at Inria Sophia Antipolis Méditerranée. His research activities concern analysis and control of systems governed by partial differential equations (PDEs), optimization theory and algorithms and PDE-constrained games. Application fields are related to (nonlinear) mechanics, image processing, inverse problems and cell dynamics.

**Dr. Guénhaël Le Quilliec** received his PhD degree in 2011 from the Doctoral School SPIGA at Centrale Nantes on the subject "Application of high frequency hammering for the optimization of the maintenance of metallic welded structures". He is an Assistant Professor of Mechanical Engineering since 2013 at École Polytechnique de l'Université de Tours. His teaching focuses on design of machines, computer-aided design/manufacturing and robotics. His research topics

mainly concern the optimization of manufacturing processes and the mechanical characterization of materials, both experimentally and numerically. He is author of 12 papers in international journals in these fields.

**Anna Madra** is a Ph.D. student at UTC and Polytechnique Montréal. Her research topic is composite materials, with a particular interest in X-ray microtomography study of the woven textile reinforcement and modeling of its permeability for Resin Transfer Molding (RTM) processes. She has received several awards, including "Summa cum laude" medal for best graduate students at Poznan University of Technology and Volkswagen scholarship for best students.