



**A** The EU 6th Framework Programme  
Specific Support Action  
**AEROCHINA** Europe-China Open Workshop on

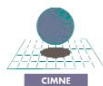
## Modeling, Simulation, Experimentation and Design in Aerospace Engineering: Case Studies and Challenges

April 25-27, 2007 CIMNE, Barcelona, Spain



### Organization:

- CIMNE / UPC, Barcelona, Spain in association with EU, MOST and AVIC1
- ACTRI / Xi'an, China



An Aeronautics RTD event with the China-EU  
Science & Technology Year 2007 (CESTY 2007)

# Agenda of AEROCHINA China-Europe Open Workshop and M18 review meeting (April 25-27, 2007)



**Location:** Conference Room CIMNE/UPC: Campus Norte UPC; Building C2, c/Gran Capitán s/n, Barcelona

## Seminar Format:

- 30 min. European plenary invited lectures;
- 20 min. parallel sessions on case studies delivered by Chinese and European AEROCHINA partners

## Wednesday, April 25, 2007

- 09:00-09:30** REGISTRATION, *Conference Room, Building C2*
- 09:30-10:00** WELCOME ADDRESS (Chairman: **G. Buggeda**, *CIMNE*)  
*Conference Room, Building C2*  
**D. Knoerzer**, *EC DG Research*, **SUN Jian**, *AVIC1*, **R. Codina**, *UPC*,  
**E. Oñate**, *CIMNE*  
 Introduction into the Open Workshop, **J. Periaux**, *CIMNE*, and **BAI Wen**, *ACTRI/AVIC1*
- 10:00-11:00** **PLENARY SESSION** (Chairman: **V. Selmin**, *ALENIA*)
- |   |                                |
|---|--------------------------------|
| <b>Design Optimisation</b>  | <b>Invited Speaker Session</b> |
| <i>Conference Room, Building C2</i>   |                                |
| Aerodynamic Design Optimisation for Blended Wing Body Aircraft,<br><b>Ning Qin</b> , <i>University of Sheffield, UK</i> |                                |
| Split of Territories in Concurrent Optimization, <b>J.A. Desideri</b> , <i>INRIA, France</i>                            |                                |
- 11:00-11:30** Coffee break
- 11:30-12:30** Concurrent sessions: AEROCHINA partners (M1A, M1B)

### Session 10 Simulation I

Chairman: ■ **A. Abbas**, *Airbus*  
 ■ **TANG Zhili**, *NUAA*

*Seminar Room, Building C1*

■ Three Case Studies from NPU: Stability of Vortex Flow, Approximate BCs, and Advanced Airfoil Design, **GAO Chao**, *NPU* (P15)

■ Study of wind tunnel model deformations produced by twisting supports, **R. Flores**, *CIMNE, Spain* (P1)

■ Simulation and Analysis of Synthetic Jet Characteristic and Performance by CFD, **CHEN Bao**, *CARIA* (P16)

### Session 20 Control I

Chairman: ■ **J.C. Courty**, *Dassault*  
 ■ **MING Xiao**, *NUAA*

*Conference Room, Building C2*

■ Control for Cavity Flow, **LI Jun**, *SARI* (P17)

■ Application of optimal control for multi-disciplinary aerospace problems, **J. Saniger**, *EADs-CRC, France* (P3)

■ Oscillating Free-stream Effects on Dynamic Characteristics of Wind Tunnel Models, **MING Xiao**, *NUAA* (P21)



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**12:30-14:00** Lunch

**14:00-15:00** Concurrent sessions: AEROCHINA partners (M2A, M2B)

### Session 11

### Simulation II

Chairmen: ■ **N. Schade**, *DLR*  
 ■ **ZHENG Yao**, *Zhejiang Univ.*  
*Seminar Room, Building C1*

■ Aerodynamic interactions of two airfoils in unsteady motion, **ZHANG Jinbai**, *BUAA*, (P19)

■ Numerics/experiments comparison for shock wave impacts a deforming panel, **D. Zeitoun**, *IUSTI-Univ. Provence* (P6)

■ Preliminary results of hybrid mesh-free methods for flow applications, **CHEN HONGQUAN**, *NUAA* (P21)

### Session 21

### Optimization I

Chairmen: ■ **W. Haase**, *EADs-M*  
 ■ **CHEN Yingchun**, *FAI*  
*Conference Room, Building C2*

■ Robust design: a new technology for design with uncertainties, **TANG Zhili**, *NUAA* (P21)

■ Shape Optimization Problems in Aerodynamics using Hierarchical Methods, **T. Nguyen**, *INRIA, France* (P7)

■ Advanced Inlet Design, **YANG Yingkai**, *CADI* (P14)

**15:00-16:00** Concurrent sessions : AEROCHINA partners

### MULTIPHYSICS WORKING GROUPS (WGS) MEETING

Chairmen: ■ **J.Periaux**, *CIMNE* and ■ **ZHENG Yao**, *Zhejiang Univ.*

WG1: Aero-elasticity (co-chairs: AIRBUS, NPU), *Conference Room*

WG2: Aero-combustion (co-chairs: IUSTI, ZJU), *Conference Room*

WG3: Aero-thermal (co-chairs: EADS-CRC, CAAA), *Conference Room*

WG4: Aero-vibro-acoustics(co-chairs: ERCOFTAC, NUAA), *Seminar Room*

WG5: Flow-control (co-chairs : DASSAULT, NUAA), *Seminar Room*

WG6: Flight-mechanics-coupling (co-chairs: EADS-M,/DLR, FAI), *Seminar Room*

**16:00-16:30** Coffee break

### 16:30-17:00 Plenary session

*Conference Room, Building C2*

Reporting 1 of Working Groups by WG co-chairs Chairmen: ■ **G. Buggeda** and **J.Periaux**, *CIMNE* ■ **ZHENG Yao**, *Zhejiang Univ.* and **BAI Wen** *ACTRI/AVIC1*

**17:00-18:30** M18 rehearsal meeting (restricted to AEROCHINA partners)

**19:00-20:30** Cocktail Reception at CIMNE

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# Agenda of AEROCHINA China-Europe Open Workshop and M18 review meeting (April 25-27, 2007)

**Thursday, April 26, 2007**

**09:00-10:00** OPENING CEREMONY (*Conference Room Building C2*)

Chairman: **Dietrich Knörzer**, *EC DG Research*

- **A. Siegler**, *Transport Director, EC*
- **Zhou Jun**, *AVIC1 Deputy Director-General*
- **L.E. Ruiz**, *Subdirector Adjunto, Subdir. de Promoción de Grandes Instalaciones (MEC)*
- **F. de Caralt**, *President Barcelona Aeronautics and Space (BAIE)*
- **L. Torres**, *Vice-Rector for International Policy, UPC*
- **E. Oñate**, *Director CIMNE*

## Experimentation and multi-physics optimisation

Chairman: **D. Knörzer**, *EC DG Research*

## Invited speakers session

*Conference Room Building C2*

**10:00-11:00** Some critical issues in testing for aircraft technologies and the capabilities of the German-Dutch Windtunnel DNW, **G. Eitelberg**, *DNW, Germany*.

Some key technical challenges in Simulation to develop the Virtual Bird concept, **E. Duceau**, *EADS Innovation Works and Pascal Gendre, Airbus, France*

**11:00-11:30** Coffee break

**11:30-12:30** Concurrent sessions: AEROCHINA partners (Session, M3B)

## Session 12 Experiment & Validation

Chairmen: ■ **D. Zeitoun**, *IUST*

■ **ZHENG Chengxing**, *CADI/AVIC1, Seminar Room, Building C1*

■ FFP6 REMFI project/experimental and validation exercise, **A. Abbas and J. Dias**, *AIRBUS, Spain (P5)*

■ Static Aeroelastic Optimization Design of Joined Wing, **ZHENG Chengxing**, *CADI (P14)*

■ Case studies for verification of FW-H approach to aeronautics, **C. Hirsch**, *ERCOTAC (P9)*

## Session 22 Optimization II

Chairmen: ■ **C. Hirsch**, *NUMECA*,

■ **CHEN Hongquan**, *NCAA, Conference Room, Building C2*

■ Optimisation in the aeronautics industry using evolutionary algorithms, **W. Haase**, *EADS-M, Germany (P4)*

■ Aircraft Winglet Optimization Design and Validation, **CHEN Yingchun**, *FAI (P18)*

■ Tools for Aerodynamic Shape Optimization of the DLR-F6 Aircraft Configuration, **N. Schade**, *DLR, Germany (P8)*



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**12:30-14:00** Lunch

**14:00-15:00** Concurrent sessions: AEROCHINA partners (M2A, M2B)

### Session 13

### New tools

Chairmen: ■ **G. Buggeda**, *CIMNE*  
 ■ **HUANG Youan**, *CAAA*

*Seminar Room, Building C1*

■ A New Method of Wing Flapping Based on Bionics of Fruit Fly Hovering at Low Reynolds Number, **MA Handong**, *CAAA* (P24)

■ Possibilities of the finite point method for aerodynamic analysis, **E. Ortega**, *INGENIA, Spain* (P12)

■ Advances in Mesh Generation and Deformation: Theory and Applications in Solid Mechanics, **YUAN Mingwu**, *Peking University* (P23)

**15:00-15:30** Coffee break

**15:30-17:00** Round table Discussion "EU-China bilateral efforts in R&T in aeronautics"  
 (Moderators: **E. Oñate**, *CIMNE* and **J. Periaux**, *Aerochina Coordinator*)

PANELIST INSTITUTIONS:

EC: **A. Siegler**, *Transport Director*

AVIC1: **ZHOU Jun**, *Deputy Director-General*

ACTRI: **NIU Wensheng**, *Vice President*

FAI: **CHEN Yingchun**, *Director*

AIRBUS: **A. Abbas**, *Project Manager Fligh Physics*

ADS: **W. Haase**, *Project Manager Fligh Physics*

DNW: **G. Eitelberg**, *Director*

**21:00-23:00** Banquet hosted by CIMNE/UPC.

### Session 23

### Control II

Chairmen: ■ **J. Saniger**, *EADs-CCR*  
 ■ **MING Xiao**, *NUAA*

*Conference Room, Building C2*

■ Control Noise of Supersonic Impinging Jet by Shield Method and Microjets, **YAO Zhaohui**, *Tsinghua University* (P20)

■ Airfoil leading edge boundary layer separation control by synthetic jet slot, **J-C Courty**, *Dassault Aviation, France* (P2)

■ Numerical Parametric Study of Active Control for Separation Flow over the CFDVAL2004 Hump Model, **LI Li**, *ACTRI* (P13)



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# Agenda of AEROCHINA China-Europe Open Workshop and M18 review meeting (April 25-27, 2007)

**Friday, April 27, 2007**

**09:00-10:00** Concurrent sessions: AEROCHINA partners

## **Session 14 Optimization III**

Chairmen: ■ **G. Buggeda**, *CIMNE*

■ **YANG YINGKAI**, *CADI*  
*Conference Room, Building C2*

■ Static Aeroelastic Optimization Design of Joined Wing, **ZHENG Chengxing**, *CADI* (P14)

■ Fast Structural Design System COMPASS and MDO, **SUN Xiasheng**, *ASRI/AVIC1*, (I01)

## **Session 24 Computational Mechanics**

Chairmen: ■ **J. Periaux**, *CIMNE*

■ **YUAN Mingwu**, *PKU*  
*Conference Room, Building C2*

■ Development of Ti alloys and Net shape manufacturing of aerospace components, **Xinghua WU**, *Univ. Birmingham, UK* (P10)

■ Experiences in Computational Combustion, **ZHENG Yao**, *Zhejiang University*, (P22)

■ Adaptive Landing Gears for Improved Impact Absorption-ADLAND, **J. Holnicki**, *IFTR* (P11)

**10:00-10:30** Coffee break

## **Computational Multiphysics**

Chairman : ■ **J.A. Desideri**, *INRIA*

## **Invited speakers session**

*Conference Room Building C1*

**10:30-11:30** Multidisciplinary Integration in the Context of Aircraft Design, **V. Selmin**, *ALENIA*.

Fluid Mechanics and Optics: the effect of turbulence in the observation of the Universe, **R. Codina**, *UPC*.

**11:30** Concluding remarks

**11:40** Workshop adjourned

**11:45-13:30** M18 AEROCHINA meeting # 2 (restricted to AEROCHINA partners)

Chairmen: ■ **G. Buggeda** and **J. Periaux**, *CIMNE* ■ **ZHENG Yao**, *Zhejiang Univ.*  
and **BAI Wen**, *ACTRI/AVIC1*



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## AEROCHINA M18 Meeting (restricted to AEROCHINA partners)

### Wednesday, April 25, 2007

Co-Chairmen: **J. Periaux** and **G. Bugeda**, CIMNE; **BAI Wen**, ACTRI/AVIC1

Coffee / tea available during the meeting

- 17:00-17:30** Overview of the AEROCHINA project, **G. Bugeda** (CIMNE), and **BAI Wen** (ACTRI)
- 17:30-18:30** Activity Reports of the Work Packages (Wps):
- Specification of prospective strategy and work plans (CIMNE, ACTRI)
  - Web based AEROCHINA Communication System (CIMNE, ACTRI, INRIA)
  - State of the art review and collection of data (DLR, BUAA)
  - Identification of future joint multidisciplinary RTD (IUSTI, NUAA)
  - Dissemination activities (CIMNE, ACTRI)
  - Project Management (CIMNE, ACTRI)
- 18:30** End of rehearsal M18 meeting

### Friday, April 27, 2007

- 11:45-12:05** Administrative and financial aspects (cost statements) (CIMNE)
- 12:05-12:45** Reporting #2 WGs activities and lessons learned from the Workshop  
WG Cochairs and Case studies co chairs
- 12:45-12:55** Summary of main achievements of AEROCHINA project (CIMNE, ACTRI)
- 12:55-13:15** Future actions (Exploitation, FP7) (CIMNE, ACTRI)
- 13:15-13:35** Summary Statement and EC remarks ( EC & Reviewers)
- 13:35-13:45** Any other business
- 13:45** Meeting adjourned



### Partners of the Project

#### From Europe

AIRBUS  
CIMNE/UPC  
DASSAULT  
DLR  
EADS CRC  
EADS-M/DE  
ERCOFTAC  
IFTR  
INGENIA  
IUSTI-UNIV. PROV  
INRIA  
UNIV. BIRMINGHAM

#### From China

ACTRI/AVIC1  
BUAA  
CAAA  
CADI/AVIC1  
CARIA/AVIC1  
FAI/AVIC1  
NPU  
NUAA  
PEKING UNIV.  
SARI/AVIC1  
TSINGHUA UNIV.  
ZHEJIANG UNIV.

**D. Knoerzer, Principal Project Officer, EC, DG Research Aeronautics**

**Aerochina Coordinators : G. Bugada and J.Periaux, CIMNE**

**Aerochina deputy Coordinator: BAI Wen, ACTRI/AVIC1**



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