europass

Maochao Xiao

Email: maochao.xiao@uniroma1.it

Date of birth: 30/05/1994 **Nationality:** Chinese

WORK EXPERIENCE

[2019 – 2022]

Research assistant

Laboratory of Advanced Simulation of Turbulence (LAST), Tsinghua University

City: Beijing

Country: China

EDUCATION AND TRAINING

[2022 – Current]

PhD of Engineering

Sapienza University of Rome

Address: 00184, Rome, Italy

[2016 – 2019]

Master of Engineering

Tsinghua University

Address: 100084, Beijing, China

[2012 – 2016]

Bachelor of Engineering

Northwestern Polytechnical University

Address: 710100, Xi'an, China

LANGUAGE SKILLS

Mother tongue(s): Chinese

Other language(s):

English

LISTENING C2 **READING** C2 **WRITING** C2

SPOKEN PRODUCTION C2 **SPOKEN INTERACTION** C2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PUBLICATIONS

A New Detached Eddy Simulation Approach with Anisotropic Subgrid Stress modeling and Its Applications in Separated Iced Wing Flow Prediction

Reference: drafting

Study on Perturbation Introduction Method of Asymmetric Vortex Simulation of Slender Body at High Angle of Attack

Reference: Zhang, S., Xiao, M., Zhang, Y., and Chen, H. Air & Space Defense, Vol. 5, No. 3, 2022.

Enhanced Prediction of Three-dimensional Finite Iced Wing Separated Flow Near Stall

Reference: Xiao, M., Zhang, Y., and Zhou, F. International Journal of Heat and Fluid Flow, Vol. 98, 2022.

Improved Prediction of Flow Around Airfoil Accreted with Horn or Ridge Ice

Reference: Xiao, M., and Zhang, Y. AIAA Journal, Vol. 59, No. 6, 2021, pp. 2318-2327.

Numerical Investigation of the Unsteady Flow Past an Iced Multi-Element Airfoil

Reference: Xiao, M., Zhang, Y., and Zhou, F. AIAA Journal, Vol. 58, No. 9, 2020, pp. 3848-3862.

Assessment of the SST-IDDES with a Shear-Layer-Adapted Subgrid Length Scale for Attached and Separated Flows

Reference: Xiao, M., and Zhang, Y. International Journal of Heat and Fluid Flow, Vol. 85, 2020.

Numerical Study of Iced Airfoils with Horn Features using Large-Eddy Simulation

Reference: Xiao, M., Zhang, Y., and Zhou, F. Journal of Aircraft, Vol. 56, No. 1, 2019, pp. 94-107.

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Reference: Chen, H., Zhang, Y. , Li, Z., and Xiao, M.

CONFERENCES AND SEMINARS

[2018] **Development of Shear-Layer-Adapted Sub-grid length Scale for SST-IDDES**
10th International Conference on Computational Fluid Dynamics, Barcelona, Spain

[2018]

Evaluation of M-SST Based IDDES with a Shear-Layer-Adapted Sub-Grid Length Scale in Separated Flows

7th Symposium on Hybrid RANS-LES Methods, Berlin, Germany

[2018] **Application of Large-Eddy Simulation in Aerodynamics and Aeroacoustics**
4th National Conference on Unsteady Aerodynamics, Hefei, China

Best Paper Award (about 10 in China)

[2018]

Numerical Simulation of Separated Flow around an Iced Airfoil Based on WMLES

3th National Conference on Aircraft Icing and Deicing, Chengdu, China

Best Paper Award (about 10 in China)

[2018]

Numerical Simulation of Separated Flow around an Iced Airfoil Based on WMLES

3th National Conference on Aircraft Icing and Deicing, Chengdu, China

Best Paper Award, about 10 in China

[2017]

Numerical Study of an Iced Airfoil Based on Delayed Detached-Eddy Simulation with Low Dissipation Scheme

9th AIAA Atmospheric & Space Environments Conference, Denver, USA

[2017]

Numerical Simulation of the Stall Behaviors of an Iced Airfoil Based on DDES

Hangzhou, China

Best Paper Award, about 15 in China

PROJECTS

[2021 – Current] **Development of IDDES with Anisotropic Minimum Dissipation SGS Modeling**

Developing an enhanced IDDES method with anisotropic minimum dissipation subgrid stress modeling (AMD-IDDES), suitable to use on anisotropic grids and in the flows where the “grey area” issue is severe and free-shear-layer transition exists

[2021 – Current] **Numerical Study of Iced Wing Flows**

Studying the aerodynamic effects of horn and streamwise ice on wings via AMD-IDDES and analyzing the effects of wing tip vortex and end-wall interactions

[2017 – 2020] **Assessment of SST-IDDES with a Shear-Layer-Adapted Subgrid Length Scale**

Combining the SST-IDDES with a shear-layer-adapted subgrid length scale to address the “grey area” issue and validating the method via canonical test cases and iced airfoil/wing flows

[2016 – 2020] **Numerical Study of Iced Airfoil Flows**

Studying the aerodynamic effects of horn, streamwise and ridge ice on (multi-element) airfoils via wall-modeled LES and AMD-IDDES, extracing the dominant flow structures via proportional orthogonal decomposition (POD), and analyzing the vortex motions in the ice-induced separated shear layers and acoustic resonance around the iced slat

[2015 – 2016] **Development of Reduced-Order Finite Difference Method**

Developing a reduced-order finite difference method based on POD technique to accelerate the solving of the NS equations by two orders of magnitude and validating the reduced-order method via a laminar backward-facing step flow and cavity flow

[2013 – 2016] **Development of Mathematical Models for Real-Life Problems**

Competing in national and international mathematical contests in modelling and grading papers in the first round of the 8th MathorCup Mathematical Contest and in the 8th Asia Pacific Mathematical Contest

HONOURS AND AWARDS

Outstanding Master Graduate Award

3 recipients in the school, 2019

Scholarship of Dongnan Elevator Corporation

2019

Outstanding Graduate Award

2016

Scholarship of National Aero-technology Import & Export Corporation (Rank 1, only 6 recipients among 3000 undergraduates)

Rank 1, only 6 recipients among 3000 undergraduates, 2015

First Prize in MathorCup Mathematical Contest in Modeling

9 in China, 2015

First Prize in Certificate Authority Cup Mathematical Contest in Modeling

2 times, 2014, 2015

First-class Scholarship for Academic Excellence (3 times)

3 times, 2013, 2014, 2015

National Scholarship

top 1.5% in the department, 2 times, 2013, 2014

Grant for Scientific Research Program

$4000, 2014

Outstanding Delegate in Northwest District Model United Nation Conference (8 in China)

8 in China, 2014