Prof. Mehmet Şahin

Personal Information

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International Researcher IDs
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Education Information

Doctorate, Ecole Polytechnique Federale De Lausanne, Makina Mühendisliği, Switzerland 2001 - 2004

Postgraduate, Georgia Institute of Technology, Uzay Mühendisliği, United States Of America 1999 - 2000

Undergraduate, Istanbul Technical University, Uçak Ve Uzay Bilimleri Fakültesi, Uçak Mühendisliği Bölümü, Turkey 1990 - 1995

Undergraduate Double Major, Istanbul Technical University, Fen-Edebiyat Fakültesi, Fizik Mühendisliği Bölümü, Turkey 1990 - 1995

Foreign Languages

English, C1 Advanced
Japanese, B1 Intermediate
French, B1 Intermediate

Dissertations

Doctorate, A numerical investigation using a novel finite volume method of some flow instabilities, Ecole Polytechnique Fédérale De Lausanne, Epfl (The Federal Institute Of Technology, Lausanne), Makina , Lmf-Ise-Fstı, 2004

Research Areas

Computer Sciences, algorithms, Parallel Algorithms, Software, Mechanical Engineering, Energy, Fluid Mechanics, Aeronautical and Space Engineering, Space Engineering, Software, Numerical modeling, Engineering and Technology

Academic Titles / Tasks

Associate Professor, Istanbul Technical University, Uçak Ve Uzay Bilimleri Fakültesi, Uzay Mühendisliği Bölümü, 2011 - Continues

Assistant Professor, Istanbul Technical University, Uçak Ve Uzay Bilimleri Fakültesi, 2009 - 2011

Published journal articles indexed by SCI, SSCI, and AHCI

I. **A mass conserving arbitrary Lagrangian-Eulerian formulation for three-dimensional multiphase fluid flows**
Guventurk C., Şahin M.
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS, vol.94, no.4, pp.346-376, 2022 (SCI-Expanded)

II. **Propulsive performance of plunging airfoils in biplane configuration**
Yucel S. B., Sahin M., Unal M. F.
PHYSICS OF FLUIDS, vol.34, no.3, 2022 (SCI-Expanded)

III. **Experimental and numerical investigation of co-axial rotor interaction to thrust**
Soydan A., Sahin H., Bicer B., Sanozkan S., Şahin M.
PROGRESS IN COMPUTATIONAL FLUID DYNAMICS, vol.22, no.5, pp.317-330, 2022 (SCI-Expanded)

IV. **An efficient edge based data structure for the compressible Reynolds-averaged Navier–Stokes equations on hybrid unstructured meshes**
Akkurt S., Şahin M.
International Journal for Numerical Methods in Fluids, vol.94, no.1, pp.13-31, 2022 (SCI-Expanded)

V. **A face-based monolithic approach for the incompressible magnetohydrodynamics equations**
Ata K., Şahin M.
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS, vol.92, no.5, pp.347-371, 2020 (SCI-Expanded)

VI. **The numerical investigation of Lagrangian and Eulerian coherent structures for the near wake structure of a hovering Drosophila**
Dilek E., ERZİNCANLI B., Şahin M.
THEORETICAL AND COMPUTATIONAL FLUID DYNAMICS, vol.33, pp.255-279, 2019 (SCI-Expanded)

VII. **A monolithic fluid-structure interaction framework applied to red blood cells**
Cetin A., Şahin M.
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN BIOMEDICAL ENGINEERING, vol.35, no.2, 2019 (SCI-Expanded)

VIII. **An integral equation approach for the solution of the Stokes flow with Hermite surfaces**
Ata K., Şahin M.
ENGINEERING ANALYSIS WITH BOUNDARY ELEMENTS, vol.96, pp.14-22, 2018 (SCI-Expanded)

IX. **An arbitrary Lagrangian-Eulerian framework with exact mass conservation for the numerical simulation of 2D rising bubble problem**
Guventurk C., Şahin M.
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING, vol.112, no.13, pp.2110-2134, 2017 (SCI-Expanded)

X. **A parallel monolithic approach for fluid-structure interaction in a cerebral aneurysm**
EKEN A., Şahin M.
Computers and Fluids, vol.153, pp.61-75, 2017 (SCI-Expanded)

XI. **A parallel adaptive viscoelastic flow solver with template based dynamic mesh refinement**
Oner E., Sahin M.
JOURNAL OF NON-NEWTONIAN FLUID MECHANICS, vol.234, pp.36-50, 2016 (SCI-Expanded)

XII. **A parallel monolithic algorithm for the numerical simulation of large-scale fluid structure interaction problems**
Eken A., Sahin M.
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS, vol.80, no.12, pp.687-714, 2016 (SCI-Expanded)

XIII. **Strong transient effects of the flow around a harmonically plunging NACA0012 airfoil at low Reynolds numbers**
Yucel S. B., Sahin M., Unal M. F.
THEORETICAL AND COMPUTATIONAL FLUID DYNAMICS, vol.29, pp.391-412, 2015 (SCI-Expanded)

XIV. **The numerical simulation of the wing kinematics effects on near wake topology and aerodynamic**

performance in hovering Drosophila flight

Erzincanli B., Sahin M.

COMPUTERS & FLUIDS, vol.122, pp.90-110, 2015 (SCI-Expanded)

XV.   An arbitrary Lagrangian-Eulerian formulation for solving moving boundary problems with large displacements and rotations

Erzincanli B., Sahin M.

JOURNAL OF COMPUTATIONAL PHYSICS, vol.255, pp.660-679, 2013 (SCI-Expanded)

XVI.   Parallel large-scale numerical simulations of purely-elastic instabilities behind a confined circular cylinder in a rectangular channel

Sahin M.

JOURNAL OF NON-NEWTONIAN FLUID MECHANICS, vol.195, pp.46-56, 2013 (SCI-Expanded)

XVII.   A stable unstructured finite volume method for parallel large-scale viscoelastic fluid flow calculations

Sahin M.

JOURNAL OF NON-NEWTONIAN FLUID MECHANICS, vol.166, pp.779-791, 2011 (SCI-Expanded)

XVIII.   The numerical comparison of flow patterns and propulsive performances for the hydromedusae Sarsia tubulosa and Aequorea victoria

Sahin M., MOHSENI K., Colin S. P.

JOURNAL OF EXPERIMENTAL BIOLOGY, vol.212, no.16, pp.2656-2667, 2009 (SCI-Expanded)

XIX.   An arbitrary Lagrangian-Eulerian formulation for the numerical simulation of flow patterns generated by the hydromedusa Aequorea victoria

Sahin M., MOHSENI K.

JOURNAL OF COMPUTATIONAL PHYSICS, vol.228, no.12, pp.4588-4605, 2009 (SCI-Expanded)

XX.   A parallel adaptive unstructured finite volume method for linear stability (normal mode) analysis of viscoelastic fluid flows

Sahin M., Wilson H. J.

JOURNAL OF NON-NEWTONIAN FLUID MECHANICS, vol.155, pp.1-14, 2008 (SCI-Expanded)

XXI.   Molecular physics of a polymer engineering instability: Experiments and computation

Hassell D. G., Mackley M. R., Sahin M., Wilson H. J., Harlen O. G., McLeish T. C. B.

PHYSICAL REVIEW E, vol.77, no.5, 2008 (SCI-Expanded)

XXII.   A semi-staggered dilation-free finite volume method for the numerical solution of viscoelastic fluid flows on all-hexahedral elements

Sahin M., WILSON H. J.

JOURNAL OF NON-NEWTONIAN FLUID MECHANICS, vol.147, pp.79-91, 2007 (SCI-Expanded)

XXIII.   A preconditioned semi-staggered dilation-free finite volume method for the incompressible Navier-Stokes equations on all-hexahedral elements

Sahin M.

INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS, vol.49, no.9, pp.959-974, 2005 (SCI-Expanded)

XXIV.   On the effects of viscoelasticity on two-dimensional vortex dynamics in the cylinder wake

Sahin M., OWENS R.

JOURNAL OF NON-NEWTONIAN FLUID MECHANICS, vol.123, pp.121-139, 2004 (SCI-Expanded)

XXV.   A numerical investigation of wall effects up to high blockage ratios on two-dimensional flow past a confined circular cylinder

Sahin M., OWENS R.

PHYSICS OF FLUIDS, vol.16, no.5, pp.1305-1320, 2004 (SCI-Expanded)

XXVI.   A novel fully implicit finite volume method applied to the lid-driven cavity problem - Part I: High Reynolds number flow calculations

Sahin M., OWENS R.

INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS, vol.42, no.1, pp.57-77, 2003 (SCI-Expanded)

XXVII.   A novel fully-implicit finite volume method applied to the lid-driven cavity problem. Part II. Linear stability analysis

Sahin M., OWENS R.

INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS, vol.42, no.1, pp.79-88, 2003 (SCI-Expanded)

XXVIII. **Solution of the incompressible unsteady Navier-Stokes equations only in terms of the velocity components**

Sahin M.

INTERNATIONAL JOURNAL OF COMPUTATIONAL FLUID DYNAMICS, vol.17, no.3, pp.199-203, 2003 (SCI-Expanded)

XXIX. **Dynamic stall alleviation using a deformable leading edge concept - A numerical study**

Sahin M., SANKAR L., CHANDRASEKHARA M., TUNG C.

JOURNAL OF AIRCRAFT, vol.40, no.1, pp.77-85, 2003 (SCI-Expanded)

XXX. **A fast higher-order integral equation method for solution of the full potential equation around airfoils**

Sahin M., KAMEMOTO K.

ENGINEERING ANALYSIS WITH BOUNDARY ELEMENTS, vol.24, no.5, pp.441-445, 2000 (SCI-Expanded)

Refereed Congress / Symposium Publications in Proceedings

I. **An Application of Anisotropic Mesh Refinement to Solve Flow around the S-76 Main Rotor with Swept-Tapered Tip**

Aksoy E., Şahin M.

AIAA Science and Technology Forum and Exposition, AIAA SciTech Forum 2022, California, United States Of America, 3 - 07 January 2022

II. **HEMLAB Algorithm Applied to 4th AIAA CFD High Lift Prediction Workshop**

Sukas H., Şahin M.

AIAA AVIATION 2022 Forum, Illinois, United States Of America, 27 June - 01 July 2022

III. **Hemlab algorithm applied to the high-lift jaxa standard model**

Sukas H., Şahin M.

AIAA Science and Technology Forum and Exposition, AIAA SciTech Forum 2021, Virtual, Online, 11 - 15 January 2021, pp.1-17

IV. **An efficient edge based data structure for a vertex based finite volume algorithm on hybrid unstructured meshes**

AKKURT S., ŞAHİN M.

10th International Aerospace Conference, 18 October 2020 - 20 October 2019

V. **An edge based finite volume approach for the solution of the incompressible Navier-Stokes equations on unstructured triangular meshes**

Furkan O., ŞAHİN M.

10th International Aerospace Conference, Ankara, Turkey, 18 - 20 October 2019

VI. **A block based preconditioner for fluid-structure interaction problems**

CETIN A., ŞAHİN M.

31st International Conference on Parallel Computational Fluid Dynamics, 14 - 17 May 2019

VII. **A parallel monolithic approach for the incompressible magnetohydrodynamics equations**

ATA R. K., ŞAHİN M.

31st International Conference on Parallel Computational Fluid Dynamics, 14 - 17 May 2019

VIII. **A fully implicit ALE formulation including surface tension for multiphase flows**

Guventurk C., ŞAHİN M.

31st International Conference on Parallel Computational Fluid Dynamics, 14 - 17 May 2019

IX. **AKIŞKAN-YAPI ETKİLEŞİMİ PROBLEMLERİNİN SAYISAL SİMULASYONU İÇİN PARALEL MONOLİTİK BİR YÖNTEM**

EKEN A., ŞAHİN M.

VII. ULUSAL HAVACILIK VE UZAY KONFERANSI, Turkey, 12 - 14 September 2018

X. **A monolithic approach for the solution of the incompressible magnetohydrodynamics equations in two- and three-dimensions.**
ATA R. K., ŞAHİN M.
10th International Conference on Computational Fluid Dynamics, 9 - 13 July 2018

XI. **An arbitrary Lagrangian Eulerian formulation with exact mass conservation for the numerical simulation of a rising bubble in a viscoelastic fluid**
Guventurk C., ŞAHİN M.
10th International Conference on Computational Fluid Dynamics, 9 - 13 July 2018

XII. **monolithic fluid-structure algorithm applied to buckling of red blood cell membrane**
CETIN A., ŞAHİN M.
10th International Conference on Computational Fluid Dynamics, 9 - 13 July 2018

XIII. **A monolithic fluid-structure algorithm applied to buckling of red blood cell membrane**
Çetin A. T., Şahin M.
10th International Conference on Computational Fluid Dynamics, ICCFD 2018, Barcelona, Spain, 9 - 13 July 2018

XIV. **An efficicient data structure for three-dimensional vertex based finite volume method**
AKKURT S., ŞAHİN M.
APS 70th Annual Meeting Division of Fluid Dynamics, 19 - 21 November 2017

XV. **A fluid structure algorithm with Lagrange multipliers to model free swimming**
DILEK E., ŞAHİN M.
APS 70th Annual Meeting Division of Fluid Dynamics, 19 - 21 November 2017

XVI. **An arbitrary Lagrangian Eulerian (ALE) framework with exact mass conservation for multiphase flow problems**
GUVENTURK C., ŞAHİN M.
9th Ankara International Aerospace Conference, 20 - 22 September 2017

XVII. **A MONOLITHIC APPROACH FOR THE INCOMPRESSIBLE MAGNETOHYDRODYNAMICS EQUATIONS**
Ata K., Şahin M.
7th International Conference on Coupled Problems in Science and Engineering (COUPLED PROBLEMS), Greece, 12 - 14 June 2017, pp.491-501

XVIII. **An efficient edge based data structure implementation for a vertex based finite volume method**
Akkurt S., Şahin M.
23rd AIAA Computational Fluid Dynamics Conference, Denver, Co, United States Of America, 5 - 09 June 2017, vol.2017, no.3292, pp.1-11

XIX. **The Numerical Simulation Of The WingKinematic Effects On Near Wake Structure In Hovering Drosophila Flight**
ERZİNCANLI B., DİLEK E., ŞAHİN M.
The Engineering Mechanics Institute Conference (EMI 2017), 5 - 07 June 2017

XX. **A monolithic fluid structure interaction algorithm applied to red blood cells in a capillary**
CETIN A., ŞAHİN M.
47th AIAA Fluid Dynamics Conference and Exhibit, Denver, 5 - 09 June 2017

XXI. **An efficient edge based data structure implementation for a vertex based finite volume formulation**
AKKURT S., ŞAHİN M.
47th AIAA Fluid Dynamics Conference and Exhibit, Denver, 5 - 09 June 2017

XXII. **A numerical investigation of two different Drosophila forward flight modes**
Dilek E., Erzincanli B., ŞAHİN M.
APS 69th Annual Meeting Division of Fluid Dynamics, Portland, A.B.D. VİRJİN ADALARI, 20 - 22 October 2016

XXIII. **An arbitrary Lagrangian Eulerian ALE framework for the numerical simulation of multiphase flow problems**
Güventürk Ç., ŞAHİN M.
The 7th International Conference on Computational Methods, 1 - 04 August 2016

XXIV. **An Implicit Meshless RBF-based Differential Quadrature Method Applied to the Lid-Driven Cavity Problem**

Yeğiner Y., Şahin M., Altınkaynak A.

ICCFD9, İstanbul, Turkey, 11 - 15 July 2016, pp.1-5

XXV. **An arbitrary Lagrangian Eulerian ALE approach for moving boundary problems with large displacements and rotations**

ŞAHİN M.

9th International Conference on Computational Fluid Dynamics, 11 - 15 July 2016

XXVI. **An Implicit Meshless RBF based Dierential Quadrature Method Applied to the Lid Driven Cavity Problem**

YEĞİNER Y., ŞAHİN M., ALTINKAYNAK A.

Ninth International Conference on Computational Fluid Dynamics (ICCFD9), İstanbul, Turkey, 11 - 15 July 2016

XXVII. **An integrated simulation of a wing body combination for Drosophila flight**

Dilek E., Erzincanli B., ŞAHİN M.

European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2016), 5 - 08 June 2016

XXVIII. **The direct numerical simulation of the deflected wake phenomenon around a plunging NACA0012 airfoil at low Reynolds numbers**

ŞAHİN M., Banu Y., Unal F.

APS 68th AnnualMeeting Division of Fluid Dynamics, 22 - 24 November 2015

XXIX. **AN INTEGRATED SIMULATION OF A WING BODY COMBINATION FOR A HOVERING DROSOPHILA**

EZGI D., BELKIS E., ŞAHİN M.

68th Annual Meeting of the APS Division of Fluid Dynamics, 22 - 24 November 2015

XXX. **Heat And Mass Transfer Characteristics of a Micro Serpentine Channel with a Viscoelastic Coolant**

Ozan O., ÇELİK B., ŞAHİN M.

8th International Conference on computaional heat and mass transfer, 25 - 28 May 2015

XXXI. **The numerical simulation of the wing kinematics effects on aerodynamic performance in hovering Drosophila flight**

Erzincanli B., ŞAHİN M.

The European Numerical Mathematics and AdvancedApplications (ENUMATH) Conference, 14 - 18 September 2015

XXXII. **The direct numerical simulation of the near wake structurearound a hovering Drosophila flight**

Dilek E., Belkis E., ŞAHİN M.

8th Ankara International Aerospace Conference, 10 - 12 September 2015

XXXIII. **Large scale viscous flow solutions over deforming bodies**

ŞAHİN M.

8th Ankara International Aerospace Conference, 10 - 12 September 2015

XXXIV. **Heat and mass transfer characteristic of a serpentine channel with a viscoelastic coolant**

Ozan O., Bayram C., ŞAHİN M.

8th International Conference on Computational Heat and Mass Transfer, 25 - 28 May 2015

XXXV. **Heat and Mass Transfer Characteristics of a Micro Serpentine Channel with a Viscoelestic Coolant**

Oduncu O., Çelik B., Şahin M.

8th International conference on computational heat and mass transfer, İstanbul, Turkey, 25 - 28 May 2015, pp.122-127

XXXVI. **A parallel fully-coupled fluid-structure interaction simulation of a cerebral aneurysm**

EKEN A., Şahin M.

6th International Conference on Computational Methods for Coupled Problems in Science and Engineering, COUPLED PROBLEMS 2015, Venice, Italy, 18 - 20 May 2015, pp.116-124

XXXVII. **A monolithic approach for the numerical simulation of fluid structure interactrion problems**

Eken A., Şahin M.

43rd AIAA Fluid Dynamics Conference, San Diego, CA, United States Of America, 24 - 27 June 2013

XXXVIII. **A parallel fully coupled approach for large-scale fluid-structure interaction problems**

EKEN A., Şahin M.

3rd South-East European Conference on Computational Mechanics, SEECCM 2013, Kos Island, Greece, 12 - 14 June 2013, pp.94-116

XXXIX. **An arbitrary Lagrangian-Eulerian approach for the numerical simulation of Drosophila flight**
ERZINCANLI B., Şahin M.
6th European Congress on Computational Methods in Applied Sciences and Engineering, ECCOMAS 2012, Vienna, Austria, 10 - 14 September 2012, pp.3906-3925

XL. **A stable unstructured finite volume method with arbitrary Lagrangian-Eulerian formulation for the numerical simulation of insect flight**
ERZINCANLI B., Şahin M.
41st AIAA Fluid Dynamics Conference and Exhibit 2011, Honolulu, HI, United States Of America, 27 - 30 June 2011

XLI. **The numerical simulation of flow patterns generated by the hydromedusa Aequorea victoria using an arbitrary Lagrangian-Eulerian formulation**
Sahin M., MOHSENI K.
38th AIAA Fluid Dynamics Conference and Exhibit, Seattle, WA, United States Of America, 23 - 26 June 2008

Supported Projects

Şahin M., Akkurt S., Project Supported by Higher Education Institutions, Verimli Bir Kenar Merkezli Data Yapısı Kulanılarak Akış Çözücüsü Geliştrilmesi, 2017 - 2018

Şahin M., Project Supported by Higher Education Institutions, A Numerical Investigation of Two-Different Drosophila Forward Flight Modes, 2016 - 2018

Şahin M., Project Supported by Higher Education Institutions, An Arbitrary Lagrangian Eulerian (ALE) Framework for the Numerical Simulation of Multiphase Flow Problems, 2016 - 2018

Şahin M., Project Supported by Higher Education Institutions, DÜŞÜK REYNOLS SAYILARINDA SALINIM HAREKETİ YAPAN NACA0012 KANAT PROFİLİ ETRAFINDAKİ SİMETRİK OLMAYAN GİRDAP YAPILARININ SAYISAL DİREK SİMÜLASYONU, 2015 - 2018

Şahin M., Project Supported by Higher Education Institutions, A Parallel Monolithic Approach for Fluid-Structure Interaction in a Cerebral Aneurysm, 2014 - 2018

Şahin M., Project Supported by Higher Education Institutions, Tam Bağlaşıklı Olarak akışkan-Yapı Etkileşimi Problemlerinin Sayısal Olarak Modellenmesi, 2013 - 2018

Şahin M., Project Supported by Higher Education Institutions, Paralel Büyük Ölçekli viskoelastik Akışkan Karasızlıklarının Simülsyonu, 2012 - 2018

Şahin M., Project Supported by Higher Education Institutions, A STABLE UNSTRUCTURED FİNİTE VOLUME METHOD WİTH MULTİGRİD FOR PARALLEL LARGE SCALE INCOMPRESSİBLE VİSCOSOUS FLUİND FLOW COMPUTATİONS, 2010 - 2018

Şahin M., Project Supported by Higher Education Institutions, PARALLEL LARGE-SCALE COMPUTATION OF AN OLDROYD-B FLUID PAST A CANFIED CIRCULAR CYLINDER IN A RECTANGULAR CHANNEL USING AN UNSTRUCTURED FINITE VOLUME METHOD, 2010 - 2018

Metrics

Publication: 73
Citation (WoS): 547
Citation (Scopus): 805
H-Index (WoS): 12
H-Index (Scopus): 12

Non Academic Experience

University of Colorado at Boulder
University College London
Swiss Federal Institute of Technology at Lausanne
Georgia Institute of Technology