

## Prof. Dr. Mehmet SAHIN



Ph.D. in Mechanical Engineering  
Permanent Add..... : Mimar Sinan Mah. Sivas Cad. Cebeci B  
No:177/6 Kayseri 38020 TURKEY  
Phone.....: +90 352 235 2849 / +90 506 939 0814  
Current Address.....: Department of Astronautical Eng.  
Istanbul Technical University  
Istanbul, 34469, TURKEY  
Phone..... : +90 212 285 3106  
E-mail..... : msahin.ae00@gtalumni.org  
<http://web.itu.edu.tr/~msahin/>  
<https://scholar.google.com/citations?user=GvAUmMQAAAAJ&hl=de>

### RESEARCH INTEREST

His research and teaching interest include advanced numerical algorithms, ALE methods, high-performance computing, flow instabilities, non-Newtonian flows, low Reynolds number aerodynamics, multi-phase flows, fluid-structure interactions (FSI), dynamic mesh adaptation, magnetohydrodynamics (MHD), electrohydrodynamics (EHD) and animal locomotion.

### EDUCATION

April 2001-March 2004	Ph.D.	Mechanical Engineering Swiss Federal Institute of Technology, Lausanne, Switzerland
Jan 1999-July 2000	M.Sc.	Aerospace Engineering Georgia Institute of Technology, Atlanta, USA
April 1996-March 1998	M.Sc.	Mechanical Engineering Yokohama National University, Yokohama, Japan
Sept 1991-July 1995	B.Sc.	Aeronautical Engineering Istanbul Technical University, Istanbul, Turkey
Sept 1993-July 1995	B.Sc.	Physics Engineering Istanbul Technical University, Istanbul, Turkey
Sept 1990-July 1991		English Preparing Istanbul Technical University, Istanbul, Turkey

### LANGUAGES

Mother language is **Turkish**.  
Foreign languages are **English, Japanese** and **French**.

### WORK EXPERIENCE

May 2018-Present	Prof. Dr. Istanbul Technical University (ITU), Department of Astronautical Engineering, Istanbul, Turkey.
Oct 2011-May 2018	Assoc. Prof. Istanbul Technical University (ITU), Department of Astronautical Engineering, Istanbul, Turkey.
July 2009-Oct 2011	Assistant Prof. Istanbul Technical University (ITU), Department of Astronautical Engineering, Istanbul, Turkey.

May 2007-Aug 2008	Research Assoc. University of Colorado at Boulder (CU), Department of Aerospace Engineering Sciences, Boulder, CO.
July 2005- Mar 2007	Post-Doctoral Research Assistant, University College London (UCL), Department of Mathematics, London, UK.
Apr 2001- Sept 2004	Graduate Research Assistant, Swiss Federal Institute of Technology (EPFL), Department of Mechanical Engineering-LMF, Lausanne Switzerland.
Jan 1999- July 2000	Graduate Research Assistant, Georgia Institute of Technology (GT), School of Aerospace Engineering-CFD Lab, Atlanta, GA.

#### HONORS

Sept 1992-July 1995	Being awarded a scholarship from Scientific and Technical Research Council of Turkey.
July 1994-Sept 1994	Being awarded a scholarship from von Karman Institute for Fluid Dynamics for a short summer training program.
Jan 1996-Aug 1999	Being awarded a scholarship from Ministry of Japanese Education Culture and Sport (Monbusho).
2005-2006	Listed among the leading 3000 scientists and engineers in Marquis Who's Who in Science and Engineering (8th Edition).
2005-2006	Listed in Outstanding Scientists of the 21 <sup>st</sup> Century – Inaugural Edition by International Biographical Center, Cambridge, UK.
Sept 2013	Best paper award. A time dependent fully coupled fluid-structure interaction algorithm. 7th Ankara International Aerospace Conference, Ankara, Turkey, 11-13 September 2013, AIAC-2013-026

#### INVITED TALKS

- An arbitrary Lagrangian Eulerian (ALE) approach for moving-boundary problems with large displacements and rotations. 9<sup>th</sup> International Conference on Computational Fluid Dynamics (ICCFD9), Istanbul, Turkey, 11-15 July 2016.
- Large scale viscous flow solutions over deforming bodies. Ankara 8<sup>th</sup> International Aerospace Conference (AIAC), Ankara, Turkey, 10-12 September 2015.
- An unstructured finite volume method for complex fluid flows. Cutting Edge Research and Technology Development in the Field of Thermo-fluid Dynamics, Ozyegin University, Istanbul, Turkey, 28 May 2014.
- A parallel adaptive unstructured finite volume method for the linear stability analysis of non-Newtonian fluid flows. Koc University, Istanbul, Turkey, 8 December 2010.
- The numerical simulation of flow patterns created by a free-swimming jellyfish. International Nathigali Summer College, Pakistan, 7 July 2010.
- The challenges for parallel large-scale viscoelastic fluid flow calculations. International Nathigali Summer College, Pakistan, 6 July 2010.
- A parallel adaptive unstructured finite volume method for linear stability (normal mode) analysis of viscoelastic fluid flows. McGill University, Montreal, Canada, 27 November 2009.
- A semi-staggered divergence-free unstructured finite-volume method for the incompressible Navier-Stokes equations using all-hexahedral meshes. Stiftelsen for industriell og teknisk forskning (SINTEF), Trondheim, Norway, 24 February 2005.
- A semi-staggered divergence-free unstructured finite-volume method for the incompressible Navier-Stokes equations using all-hexahedral meshes. Paul Scherrer Institute (PSI), Villigen, Switzerland, 29 April 2005.

## PROJECTS

- HEMLAB: An Efficient Edge Based Finite Volume Algorithm Applied to the JAXA High Lift Configuration, Supported by Partnership for Advanced Computing in Europe (PRACE), DECI-16
- An Arbitrary Lagrangian Eulerian Approach with Exact Mass Conservation for Multiphase Flows. Supported by Scientific and Technical Research Council of Turkey (TUBITAK-1001), 15/05/2018-15/05/2020, (PI).
- An Arbitrary Lagrangian Eulerian Approach with Exact Mass Conservation for Multiphase Flows. Supported by Scientific and Technical Research Council of Turkey (TUBITAK-1001), 15/05/2018-15/05/2020, (PI).
- An efficient edge-based data structure for a finite volume flow solver. Istanbul Technical University - Scientific Research Project (ITU-BAP).
- Computational Fluid Dynamics (CFD) Workshop. Supported by Turkish Aerospace Industries (TAI).
- Technical team member of AVT-202 Extension of Fundamental Flow Physics to Practical MAV Aerodynamics (NATO STO Applied Technology Panel).
- An arbitrary Lagrangian-Eulerian formulation for the free-flight simulation of an insect flapping flight in a fully coupled form. Supported by Scientific and Technical Research Council of Turkey (TUBITAK-1001), 01/05/2015-01/05/2017, (PI).
- Fully-coupled large-scale numerical simulation of fluid structure interaction problems. Supported by Scientific and Technical Research Council of Turkey (TUBITAK-1001), 01/11/2012-01/11/2014, (PI).
- A stable unstructured finite volume method with arbitrary Lagrangian-Eulerian formulation for the numerical simulation of insect flight. Supported by Scientific and Technical Research Council of Turkey (TUBITAK-1001), 15/12/2011-15/12/2013 (PI).

## CONFERENCE ORGANIZATIONS

- 11<sup>th</sup> International Conference on Computational Fluid Dynamics, Maui, Hawaii, USA, 13-17 July 2020, Scientific Committee.
- 31<sup>th</sup> International Conference on Parallel Computational Fluid Dynamics, Antalya, Turkey, 14-17 May 2019, Organizing Committee.
- 10<sup>th</sup> International Conference on Computational Fluid Dynamics, Barcelona, Spain, 9-13 July 2018, Scientific Committee.
- 9<sup>th</sup> Ankara International Aerospace Conference, Ankara, Turkey, 20-22 September 2017, Scientific Committee.
- 9<sup>th</sup> International Conference on Computational Fluid Dynamics, Istanbul, Turkey, 11-15 July 2016, Local Organizing Committee.
- 8<sup>th</sup> International Conference on Computational Heat and Mass Transfer, Istanbul, Turkey, 25-28 May 2015, Local Organizing Committee.

## PAPERS and PRESENTATIONS

- C. Guventurk and M. Sahin, An implicit ALE framework for multiphase flows. 14th World Congress on Computational Mechanics (WCCM), ECCOMAS Congress 2020, 11–15 July 2021, Paris, France (Virtual Event),.
- H. Sukas and M. Sahin, HEMLAB Algorithm applied to the high-lift JAXA standart model. AIAA Science and Technology Forum and Exposition, 11-15-January (Virtual Event), AIAA paper 2021-1994.
- C. Guventurk and M. Sahin, An arbitrary Lagrangian Eulerian approach with exact mass conservation for the numerical simulation of a Taylor bubble problem. APS 73<sup>rd</sup> Annual Meeting Division of Fluid Dynamics, Chicago, IL, USA, 22-24 November 2020 (Virtual Event).

- F. Oz and M. Sahin, An edge based finite volume approach for the solution of the incompressible Navier-Stokes equations on unstructured triangular meshes. 10<sup>th</sup> International Aerospace Conference, 18-20 September 2019.
- S. Akkurt and M. Sahin, An efficient edge based data structure for a vertex based finite volume algorithm on hybrid unstructured meshes. 10<sup>th</sup> International Aerospace Conference, 18-20 September 2019.
- C. Guventurk and M. Sahin, A fully implicit ALE formulation including surface tension for multiphase flows. 31<sup>st</sup> International Conference on Parallel Computational Fluid Dynamics, Antalya, TURKEY, 14-17 May 2019.
- K. Ata and M. Sahin, A parallel monolithic approach for the incompressible magnetohydrodynamics equations. 31<sup>st</sup> International Conference on Parallel Computational Fluid Dynamics, Antalya, TURKEY, 14-17 May 2019.
- A. Çetin and M. Sahin, A block based preconditioner for fluid-structure interaction problems. 31<sup>st</sup> International Conference on Parallel Computational Fluid Dynamics, Antalya, TURKEY, 14-17 May 2019.
- C. Guventurk and M. Sahin, An arbitrary Lagrangian-Eulerian formulation with exact mass conservation for the numerical simulation of a three-dimensional rising bubble problem. 71th Annual Meeting of APS DFD, Atlanta, GA, USA, 18-20 November 2018.
- M. Sahin, An ALE based Finite Volume Approach for mult-physics problems. Symposium on Advances in Thermal & Fluid Sciences. Izmir, Turkey, 28 June 2018.
- A. Eken ve M. Sahin, Akışkan yapı etkileşimi problemlerinin sayısal simülasyonu için monolitik bir yöntem. 7. Havacılık ve Uzay Konferansı, Samsun, Turkey, 12-14 Eylül 2018.
- S. B. Yucel, M. Sahin ve M. F. Unal, Çırpan kanat aerodinamiğinin tandem kanatlar için deneysel ve sayısal olarak incelenmesi. 7. Havacılık ve Uzay Konferansı, Samsun, Turkey, 12-14 Eylül 2018.
- K. Ata and M. Sahin, A monolithic approach for the solution of the incompressible magnetohydrodynamics equations in two- and three-dimensions. 10<sup>th</sup> International Conference on Computational Fluid Dynamics, Barcelona, Spain, 9-13 July 2018.
- C. Guventurk and M. Sahin, An arbitrary Lagrangian Eulerian formulation with exact mass conservation for the numerical simulation of a rising bubble in a viscoelastic fluid. 10<sup>th</sup> International Conference on Computational Fluid Dynamics, Barcelona, Spain, 9-13 July 2018.
- C. Guventurk and M. Sahin, An arbitrary Lagrangian Eulerian formulation with exact mass conservation for the numerical simulation of a rising bubble in a viscoelastic fluid. 10<sup>th</sup> International Conference on Computational Fluid Dynamics, Barcelona, Spain, 9-13 July 2018.
- A. Cetin and M. Sahin, A monolithic fluid-structure algorithm applied to buckling of red blood cell membrane. 10<sup>th</sup> International Conference on Computational Fluid Dynamics, Barcelona, Spain, 9-13 July 2018 (Supported by ICCFD10).
- C. Guventurk and M. Sahin, An arbitrary Lagrangian Eulerian approach with exact mass conservation for the numerical simulation of the 3D rising bubble problem. 7<sup>th</sup> European Conference on Computational Fluid Dynamics, Glasgow, United Kingdom, 11-15 June 2018 (Supported by ECCM-ECFD2018).
- S. Akkurt and M. Sahin, An efficient edge based data structure for a compressible Navier-Stokes solver. 7<sup>th</sup> European Conference on Computational Fluid Dynamics, Glasgow, United Kingdom, 11-15 June 2018.
- E. Dilek and M. Sahin, A fluid structure algorithm with Lagrange multipliers to model free swimming. APS 70<sup>th</sup> Annual Meeting Division of Fluid Dynamics, Denver, CO, USA, 19-21 November 2017 (Chair).
- S. Akkurt and M. Sahin, An efficient data structure for three-dimensional vertex based finite volume method. APS 70<sup>th</sup> Annual Meeting Division of Fluid Dynamics, Denver, CO, USA, 19-21 November 2017.
- C. Güventürk and M. Sahin, An arbitrary Lagrangian Eulerian (ALE) framework with exact mass conservation for multiphase flow problems. 9<sup>th</sup> Ankara International Aerospace Conference, Ankara, Turkey, 20-22 September 2017 (Chair and Scientific Committee).
- K. Ata and M. Sahin, A monolithic approach for the incompressible magnetohydrodynamics equations. VII International Conference on Computational Methods for Coupled Problems in Science and Engineering, Rhodes Island, GREECE, 12-14 June 2017.

- A. Cetin an M. Sahin, A monolithic fluid structure interaction algorithm applied to red blood cells in a capillary. 47th AIAA Fluid Dynamics Conference and Exhibit, Denver, CO, USA, 5-9 June 2017 (Chair).
- S. Akkurt an M. Sahin, An efficient edge based data structure implementation for a vertex based finite volume formulation. 47th AIAA Fluid Dynamics Conference and Exhibit, Denver, CO, USA, 5-9 June 2017.
- B. Erzincanli, E. Dilek and M. Sahin, The numerical simulation of the wing kinematic effects on near wake structure in hovering *Drosophila* flight, Engineering Mechanics Institute Conference (EMI 2017), San Diego, California, USA, 4-7 June 2017.
- S. Akkurt and M. Sahin. A two-dimensional Delaunay based unstructured mesh generation algorithm. VI. Ulusal Havacılık ve Uzay Konferansı, Kocaeli, Turkey, 28-30 October 2016.
- E. Dilek, B. Erzincanli and M. Sahin, A numerical investigation of two-different *Drosophila* forward flight modes. APS 69<sup>th</sup> Annual Meeting Division of Fluid Dynamics, Portland, OR, USA, 20-22 November 2016.
- M. Sahin, An ALE framework for complex fluid flow simulations. Workshop on Fluid Mechanics Research, METU Northern Cyprus Campus, 28 October 2016.
- C. Güventürk and M. Sahin, An arbitrary Lagrangian Eulerian (ALE) framework for the numerical simulation of multiphase flow problems. The 7<sup>th</sup> International Conference on Computational Methods, Berkeley, CA, USA, 1-4 August 2016.
- C. Güventürk and M. Sahin, An arbitrary Lagrangian Eulerian (ALE) framework for the numerical simulation of multiphase flow problems. The 7<sup>th</sup> International Conference on Computational Methods, Berkeley, CA, USA, 1-4 August 2016.
- Y. Yeginer, M. Sahin and A. Altinkaynak, An implicit meshless RBF-based differential quadrature method applied to the lid-driven cavity problem. 9<sup>th</sup> International Conference on Computational Fluid Dynamics, Istanbul, Turkey, 11-15 July 2016, (Chair and Local Organizing Committee).
- M. Sahin, An arbitrary Lagrangian Eulerian (ALE) approach for moving-boundary problems with large displacements and rotations. 9<sup>th</sup> International Conference on Computational Fluid Dynamics, Istanbul, Turkey, 11-15 July 2016 (Invited).
- E. Dilek, B. Erzincanli and M. Sahin, An integrated simulation of a wing-body combination for *Drosophila* flight. European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2016) Crete Island, GREECE, 5-10 June 2016.
- M. Sahin, S. Banu Yucel and M. F. Unal, The direct numerical simulation of the deflected wake phenomenon around a plunging NACA0012 airfoil at low Reynolds numbers. APS 68<sup>th</sup> Annual Meeting Division of Fluid Dynamics, Boston, MA, USA, 22-24 November 2015.
- M. Sahin, Large scale viscous flow solutions over deforming bodies. Ankara 8<sup>th</sup> International Aerospace Conference, Ankara, Turkey, 10-12 September 2015 (Invited).
- B. Erzincanli, E. Dilek and M. Sahin, The direct numerical simulation of the near wake structure around a hovering *Drosophila* flight. 8<sup>th</sup> Ankara International Aerospace Conference, Ankara, Turkey, 10-12 September 2015.
- B. Erzincanli and M. Sahin, The numerical simulation of the wing kinematics effects on aerodynamic performance in hovering *Drosophila* flight. The European Numerical Mathematics and Advanced Applications (ENUMATH) Conference, Ankara, Turkey, 14-18 September 2015 (Chair).
- A. Eken and M. Sahin, A parallel fully-coupled fluid-structure interaction simulation of a cerebral aneurysm. VI International Conference on Coupled Problems in Science and Engineering, Venice, Italy, 18-20 May 2015.
- O. Oduñce, B. Celik and M. Sahin, Heat and mass transfer characteristic of a serpentine channel with a viscoelastic coolant. 8<sup>th</sup> International Conference on Computational Heat and Mass Transfer, Istanbul, Turkey, 25-28 May 2015 (Local Organizing Committee).
- A. Eken and M. Sahin, A parallel monolithic approach for fluid-structure interaction in a cerebral aneurysm. APS 67<sup>th</sup> Annual Meeting Division of Fluid Dynamics, San Francisco, CA, USA, 23-25 November 2014.

- M. Sahin, An unstructured finite volume method for complex fluid flows. Cutting Edge Research and Technology Development in the Field of Thermo-fluid Dynamics, Ozyegin University, Istanbul, Turkey, 28 May 2014 (Invited).
- E. Oner and M. Sahin, An adaptive viscoelastic flow solver with template based mesh refinement. The Eighth International Conference on Computational Fluid Dynamics (ICCFD8), Chengdu, Sichuan, China, July 14-18, 2014.
- A. Eken and M. Sahin, A time dependent fully coupled fluid-structure interaction algorithm. 7<sup>th</sup> Ankara International Aerospace Conference, Ankara, Turkey, 11-13 September 2013, AIAC-2013-026.
- S. B. Yucel, M. Sahin and M. F. Unal, Thrust generation of plunging airfoils in tandem and biplane configurations. 7<sup>th</sup> Ankara International Aerospace Conference, Ankara, Turkey, 11-13 September 2013, AIAC-2013-139.
- K. Ata, S. Karaca and M. Sahin, An integral equation approach for the solution of the Stokes flow with Hermite surfaces. XVIII. Ulusal Mekanik Kongresi, Manisa, Turkey, 26-30 August 2013.
- E. Oner and M. Sahin, Parallel large-scale numerical simulations of purely-elastic instabilities with a template-based mesh refinement algorithm. The European Numerical Mathematics and Advanced Applications (ENUMATH) Conference, Lausanne, Switzerland, 26-30 August 2013.
- A. Eken and M. Sahin, A monolithic approach for the numerical simulation of fluid structure interaction problems. 43rd AIAA Fluid Dynamics Conference and Exhibit, San Diego, CA, USA, 24-27 June 2013.
- A. Eken and M. Sahin, Parallel fully coupled approach for large-scale fluid-structure interaction problems. 3rd South-East European Conference on Computational Mechanics, Kos, Greece, 12-14 June 2013.
- B. Erzincanli and M. Sahin, The numerical investigation of the Eulerian and Lagrangian coherent structures for hovering *Drosophila* flight. 21st Annual Conference of the CFD Society of Canada, - Sherbrooke, Quebec, Canada, 6-9 May 2013.
- S. B. Yucel, M. Sahin and M. F. Unal, Thrust enhancement of flapping wing in tandem and biplane configurations by pure plunging motion. 65th Annual Meeting of the APS Division of Fluid Dynamics, San Diego, CA, USA, 18-20 November 2012.
- B. Erzincanli and M. Sahin, Numerical simulation of *Drosophila* flight based on arbitrary Lagrangian Eulerian (ALE) method. 65th Annual Meeting of the APS Division of Fluid Dynamics, San Diego, CA, USA, 18-20 November 2012.
- B. Erzincanli and M. Sahin, An arbitrary Lagrangian-Eulerian approach for the numerical simulation of *Drosophila* flight. European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012), Vienna, Austria, 10-14 September 2012.
- A. Eken and M. Sahin, The numerical simulation of large-scale fluid-structure interaction problems in a fully coupled form. 10<sup>th</sup> World Congress on computational Mechanics (WCCM 2012), Sao Paulo, Brazil, 8-13 July 2012.
- M. Sahin, Parallel large-scale simulation of viscoelastic fluid flow instabilities. 17<sup>th</sup> International Workshop on Numerical Methods for non-Newtonian Flows, Blois Castle, France, 25-28 March 2012
- A. Eken and M. Sahin, Large-scale numerical simulation of fluid structure interactions in low Reynolds number flows. APS 64<sup>th</sup> Annual Meeting Division of Fluid Dynamics, Baltimore, Maryland, USA, 20 November 2011.
- T. Reis, M. Sahin and H. Wilson, Linear instabilities in channel flows with constrictions: Two distinct elastic instabilities. The Society of Rheology 83rd Annual Meeting, Cleveland, Ohio, USA, 9-13 October 2011
- M. Sahin, Parallel large-scale calculations of viscoelastic fluid flow instabilities. 6<sup>th</sup> Ankara International Aerospace Conference, Ankara, Turkey, 14-16 September 2011, AIAC-2011-144.
- Erzincanli and M. Sahin, A stable unstructured finite volume method with arbitrary Lagrangian-Eulerian formulation for the numerical simulation of insect flight. 41<sup>th</sup> Fluid Dynamics Conference and Exhibit, Honolulu, Hawaii, USA, 27-30 June 2011, AIAA-2011-3897.

- M. Sahin, Three-dimensional viscoelastic fluid flow instabilities for the Oldroyd-B fluid past a confined circular cylinder in a rectangular channel. 16<sup>th</sup> International Conference on Finite Elements in Flow Problems, Munich, Germany, 23-25 March 2011 (sponsored by TUBITAK 2224 program).
- M. Sahin, A stable unstructured finite volume method with multigrid for parallel large-scale incompressible viscous fluid flow computations. 49<sup>th</sup> AIAA Aerospace Science Meeting, Orlando, Florida, USA, 4-7 January 2011, AIAA 2010-5096.
- M. Sahin, Parallel large-scale computation of an Oldroyd-B fluid past a confined circular cylinder in a rectangular channel using an unstructured finite volume method. APS – 63<sup>rd</sup> Annual Meeting of the Division of Fluid Dynamics, Long Beach, California, USA, 21-23 November 2010.
- M. Sahin, A stable unstructured finite volume method with multigrid for parallel large-scale incompressible viscous fluid flow computations. 40<sup>th</sup> Fluid Dynamics Conference and Exhibit, Chicago, USA, 28 June-1 July 2010, AIAA-2010-5096.
- M. Sahin, A stable unstructured finite volume method for parallel large-scale viscoelastic fluid flow calculations. XVI<sup>th</sup> International Workshop on Numerical Methods for non-Newtonian Flows, Northampton, USA, 13-15 June 2010.
- M. Sahin, The numerical simulation of flow patterns created by a free-swimming jellyfish. International Nathigali Summer College, Pakistan, 7 July 2010 (Invited).
- M. Sahin, The challenges for parallel large-scale viscoelastic fluid flow calculations. International Nathigali Summer College, Pakistan, 6 July 2010 (Invited).
- T. Reis, M. Sahin and H. J. Wilson, Co-extrusion instabilities modeled with a single fluid. The XV<sup>th</sup> International Congress on Rheology, Monterey, California, USA, August 3-8, 2008.
- D. G. Hassell, R. M. Mackley, M. Sahin and H. J. Wilson, Experimental and computational identification of a polymer melt flow instability. The XV<sup>th</sup> International Congress on Rheology, Monterey, California, USA, 3-8 August 2008.
- M. Sahin and K. Mohseni, The numerical simulation of flow patterns generated by the hydromedusa *Aequorea Victoria* using an arbitrary Lagrangian-Eulerian formulation. 38<sup>th</sup> Fluid Dynamics Conference and Exhibit, Seattle, Washington, USA, 23-26 June 2008, AIAA-2008-3715.
- M. Sahin, K. Mohseni, and K. Hillewaert, Direct numerical simulation of separated low-Reynolds number flows around an Eppler 387 airfoil. 46<sup>th</sup> AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, USA, 7-10 January 2008, AIAA-2008-422.
- M. Sahin and K. Mohseni, Direct numerical simulation of low Reynolds number separated flow around an Eppler 387. APS - 60<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics, Salt Lake City, Utah, USA, 18-20 November 2007.
- M. Sahin and H. J. Wilson, A parallel adaptive unstructured finite volume method for linear stability (normal mode) analysis of viscoelastic fluid flows. XV<sup>th</sup> International Workshop on Numerical Methods for non-Newtonian Flows, Rhodes, Greece, 6-10 June 2007.
- M. Sahin and H. J. Wilson, A semi-staggered dilation-free finite volume method for the numerical solution of viscoelastic fluid flows on all-hexahedral elements. 3<sup>rd</sup> Annual European Rheology Conference (AERC), Crete, Greece, 27-29 April 2006.
- M. Sahin and R. G. Owens, A numerical investigation of the effect of elasticity on the stability of inertial viscoelastic flows. XIII<sup>th</sup> International Workshop on Numerical Methods for non-Newtonian Flows, Lausanne, Switzerland, 4-7 June 2003.
- L. N. Sankar, M. Sahin and N. Gopal, Dynamic stall characteristics of dropped leading edge airfoils. NASA Technical Reports, January 2000.
- L. N. Sankar and M. Sahin, Dynamic stall simulations. Semiannual Meeting of the US/French MOA, NASA Ames Research Center, Moffett Field, California, USA, 28 April 2000.

- M. Sahin and L. N. Sankar, Stall alleviation using a deformable leading edge concept. IEEE Aerospace Conference, Big Sky, Montana, USA, 18-25 March 2000.
- M. Sahin, L. N. Sankar, M. S. Chandrasekhara and C. Tung, Dynamic stall alleviation using a deformable leading edge concept - A numerical study. AIAA 2000-0520, 38<sup>th</sup> Aerospace Science Meeting & Exhibit, Reno, Nevada, USA, 10-13 January 2000.
- M. Sahin and K. Kamemoto, A fast higher-order integral equation method for solution of the full potential equation around airfoils. BEM13<sup>th</sup> Boundary Element Symposium, Paris, France, 27-30 May 1998.
- M. Sahin and K. Kamemoto, A high speed panel method for solution of the full potential equation around airfoils. 11<sup>th</sup> Computational Fluid Dynamic Symposium, Tokyo, Japan, 18-20 December 1997.
- M. Sahin, Developing 3-D holographic particle image velocimetry. von Karman Institute for Fluid Dynamics, Brussel, Belgium, 4 July - 2 September 1994.

## JOURNALS

- K. Ata and M. Sahin, A face based monolithic approach for the incompressible magnetohydrodynamic equations. *International Journal for Numerical Methods in Fluid*, 92:347-371.(2020).
- E. Dilek, B. Erzincanli and M. Sahin, The numerical investigation of Lagrangian chorent structures for the near wake structure of a hovering *Drosophila*. *Theoretical and Computational Fluid Dynamics*, 33:255-279, (2019).
- A. Cetin and M. Sahin, A Monolithic Fluid Structure Interaction Framework Applied to Red Blood Cells. *International Journal for Numerical Methods in Biomedical Engineering*, 35:1-24, (2019).
- K. Ata and M. Sahin, An integral equation approach for the solution of the Stokes flow with Hermite surfaces, *Engineering Analysis with Boundary Element*, 96:14-22, (2018).
- A. Eken and M. Sahin, A parallel monolithic approach for fluid structure interaction in a cerebral aneurysm. *Computer & Fluids*, 153:61-75, (2017).
- C. Guventurk and M. Sahin, An arbitrary Lagrangian-Eulerian framework with exact mass conservation for the numerical simulation of 2D rising bubble problem. *International journal for Numerical Methods in Engineering*, 112:2110-2134, (2017).
- E. Oner and M. Sahin, A parallel adaptive viscoelastic flow solver with template based dynamic mesh refinement. *Journal of non-Newtonian Fluid Mechanics*, 234:36-50, (2016).
- A. Eken and M. Sahin, A parallel monolithic algorithm for the numerical simulation of large-scale fluid structure interaction problems. *International Journal for Numerical Methods in Fluids*, 80:687-714, (2016).
- B. Erzincanli and M. Sahin, The numerical simulation of the wing kinematics effects on near wake topology and aerodynamic performance in hovering *Drosophila* flight. *Computer & Fluids*, 122:90-110, (2015).
- S. B. Yucel, M. Sahin and M. F. Unal, Strong transient effects of the flow around a harmonically plunging NACA0012 airfoil at low Reynolds numbers. *Theoretical and Computational Fluid Dynamics*, 29:391-412, (2015).
- B. Erzincanli and M. Sahin, An arbitrary Lagrangian-Eulerian formulation for solving moving boundary problems with large displacement and rotations. *Journal of Computational Physics*, 255:660-679, (2013).
- M. Sahin, Parallel large-scale numerical simulations of purely-elastic instabilities behind a confined circular cylinder in a rectangular channel. *Journal of non-Newtonian Fluid Mechanics* 195:46-56, (2013).
- M. Sahin, A stable unstructured finite volume method for parallel large-scale viscoelastic fluid flow calculations. *Journal of non-Newtonian Fluid Mechanics* 166:779-791, (2011).
- M. Sahin, K. Mohseni and S. Colin, The numerical comparison of flow patterns and propulsive performances for the hydromedusae *Sarsia Tubulosa* and *Aequorea Victoria*. *Journal of Experimental Biology* 212:2656-2667, (2009).



- M. Sahin and K. Mohseni, An arbitrary Lagrangian-Eulerian formulation for the numerical simulation of flow patterns generated by the hydromedusa *Aequorea Victoria*. *Journal of Computational Physics* 228:4588-4605, (2009).
- D. G. Hassel, M. R. Mackley, M. Sahin, H. J. Wilson, O. G. Harlen and T. C. B. McLeish, Experimental and computational identification of a polymer melt flow instability. It has been selected for the June 1, 2008 issue of *Virtual Journal of Biological Physics Research* by the American Physical Society and the American Institute of Physics.
- D. G. Hassel, M. R. Mackley, M. Sahin, H. J. Wilson, O. G. Harlen and T. C. B. McLeish, Experimental and computational identification of a polymer melt flow instability. *Physical Review E*, **77**, 050801-R, (2008).
- M. Sahin and H. J. Wilson, A parallel adaptive unstructured finite volume method for linear stability (normal mode) analysis of viscoelastic fluid flows. *Journal of non-Newtonian Fluid Mechanics* 155:1-14, (2008).
- M. Sahin and H. J. Wilson, A semi-staggered dilation-free finite volume method for the numerical solution of viscoelastic fluid flows on all-hexahedral elements. *Journal of non-Newtonian Fluid Mechanics* 147:79-91, (2007).
- M. Sahin, A preconditioned semi-staggered dilation-free finite-volume method for the incompressible Navier-Stokes equations on all-hexahedral elements. *International Journal for Numerical Methods in Fluids* 49:959-974, (2005).
- M. Sahin and R. G. Owens, On the effects of viscoelasticity on two-dimensional vortex dynamics in the cylinder wake. *Journal of non-Newtonian Fluid Mechanics* 123:121-139, (2004).
- M. Sahin and R. G. Owens, A numerical investigation of wall effects up to high blockage ratios on two-dimensional flow past a confined circular cylinder. *Physics of Fluids* 16:1305-1320, (2004).
- M. Sahin and R. G. Owens, A novel fully-implicit finite volume method applied to the lid-driven cavity problem. Part II. Linear stability analysis. *International Journal for Numerical Methods in Fluids* 42:79-88, (2003).
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- S. Akkurt, An efficient data structure for a vertex based finite volume algorithm (2018).
- E. Dilek, Towards to the direct numerical simulation of insect free flight (2017).
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- C. Guventurk, An arbitrary Lagrangian-Eulerian (ALE) approach for the numerical simulation of multiphase flows.
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- H. Turkeri, A general purpose large-eddy simulation/probability density function simulator on block structured grids. Koc University, Istanbul, Turkey, (2017).
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