

## Assoc. Prof. Bayram Çelik

### Personal Information

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### Education Information

Doctorate, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Uzay Bilimleri Ve Teknolojisi (Dr), Turkey 1997 - 2006

Postgraduate, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Uzay Bilimleri Ve Teknolojisi (Dr), Turkey 1993 - 1997

Undergraduate, İstanbul Teknik Üniversitesi, Uçak Ve Uzay Bilimleri Fakültesi, Uzay Mühendisliği Bölümü, Turkey 1989 - 1993

### Foreign Languages

English, C1 Advanced

### Dissertations

Doctorate, Analysis of micro flows using a finite element method, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Uzay Bilimleri Ve Teknolojisi (Dr), 2006

Postgraduate, 3-boyutlu maxwell denklemlerinin çözümü, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Uzay Bilimleri Ve Teknolojisi (Dr), 1997

### Research Areas

Technical Sciences, Aeronautical and Space Engineering, Space Engineering, Task, Software, Mathematical Modeling Techniques, Numerical modeling, Simulation

### Academic Titles / Tasks

Associate Professor, Istanbul Technical University, Uçak Ve Uzay Bilimleri, Uzay Mühendisliği, 2019 - Continues

Assistant Professor, Istanbul Technical University, Uzay Mühendisliği Bölümü, 2018 - 2019

Assistant Professor, İstanbul Teknik Üniversitesi, Uçak Ve Uzay Bilimleri Fakültesi, Uzay Mühendisliği Bölümü, 2010 - 2018

Research Assistant, İstanbul Teknik Üniversitesi, Uçak Ve Uzay Bilimleri Fakültesi, Uzay Mühendisliği Bölümü, 2000 - 2010

## Academic and Administrative Experience

Vice Dean, Istanbul Technical University, Uçak Ve Uzay Bilimleri, 2020 - Continues

Vice Dean, Istanbul Technical University, Uçak Ve Uzay Bilimleri, 2019 - Continues

İstanbul Teknik Üniversitesi, Uçak Ve Uzay Bilimleri Fakültesi, Uzay Mühendisliği Bölümü, 2015 - Continues

İstanbul Teknik Üniversitesi, Uçak Ve Uzay Bilimleri Fakültesi, Uzay Mühendisliği Bölümü, 2012 - Continues

## Advising Theses

Çelik B., Dipten yanma ünitesi topçu mermilerindeki dip bölgesi sürüklenme kuvveti azaltımının hesaplamalı yöntemlerle araştırılması, Postgraduate, A.AT(Student), 2019

Çelik B., A numerical investigation on passive flow controls of open cavities at transonic speeds, Postgraduate, O.DEMİR(Student), 2019

Çelik B., Development of a modular overset grid based adaptive mesh refinement algorithm, Postgraduate, M.EL(Student), 2018

Çelik B., Hipersonik akışta şok-şok ve şok-sınır tabaka etkileşim mekanizmalarının incelenmesi ve ortaya çıkan yüzey ısı transferi açısından değerlendirilmesi, Doctorate, A.SELİM(Student), 2018

Çelik B., Numerical model of flue gas desulfurization spray tower in power plant, Postgraduate, O.GÖZÜTOK(Student), 2018

Çelik B., An investigation of heat transfer performance of rectangular channel by using vortex generators, Postgraduate, S.GİRGİN(Student), 2017

Çelik B., Eğik şok kaynaklı laminar sınır tabaka ayrılmasının hesaplamalı yöntemlerle incelenmesi, Postgraduate, H.AVŞAR(Student), 2017

## Research Infrastructure Information

Çelik B., Hesaplamalı Mühendislik Laboratuvarı, September 2014

## Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- I. **Applications of a central ENO and AUSM schemes based compressible N-S solver with reconstructed conservative variables**  
Spinelli G. G. , Çelik B.  
Computers and Fluids, vol.227, 2021 (Journal Indexed in SCI)
- II. **Unsteady shock interaction mechanisms of high enthalpy reacting flows over double wedges at Mach 7**  
Vatansever D., Çelik B.  
PHYSICS OF FLUIDS, vol.33, no.5, 2021 (Journal Indexed in SCI)
- III. **Leveling out interface temperature for conjugate heat transfer problems**  
Spinelli G. G. , Çelik B.  
COMPUTERS & FLUIDS, vol.210, 2020 (Journal Indexed in SCI)
- IV. **Effects of Double-Wedge Aft Angle on Hypersonic Laminar Flows**  
Durna A. S. , Çelik B.  
AIAA JOURNAL, vol.58, no.4, pp.1689-1703, 2020 (Journal Indexed in SCI)
- V. **Time-periodic shock interaction mechanisms over double wedges at Mach 7**  
Durna A. S. , Çelik B.  
SHOCK WAVES, vol.29, no.3, pp.381-399, 2019 (Journal Indexed in SCI)
- VI. **Assessment of predictive capabilities for aerodynamic heating in hypersonic flow**  
KNIGHT D., CHAZOT O., AUSTIN J., BADR M. A. , CANDLER G., Çelik B., ROSA D. d. , DONELLI R., KOMIVES J., LANI A., et al.

- Progress in Aerospace Sciences, vol.90, pp.39-53, 2017 (Journal Indexed in SCI Expanded)
- VII. **Shock interaction mechanisms on a double wedge at Mach 7**  
Durna A. S. , BARADA M. E. H. A. , Çelik B.  
PHYSICS OF FLUIDS, vol.28, no.9, 2016 (Journal Indexed in SCI)
- VIII. **Heat transfer enhancement in a straight channel via a rotationally oscillating adiabatic cylinder**  
Beskok A., RAISEE M., Çelik B., Yagiz B., CHERAGHI M.  
INTERNATIONAL JOURNAL OF THERMAL SCIENCES, vol.58, pp.61-69, 2012 (Journal Indexed in SCI)
- IX. **Heat transfer enhancement in a slot channel via a transversely oscillating adiabatic circular cylinder**  
Celik B., RAISEE M., Beskok A.  
INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, vol.53, no.4, pp.626-634, 2010 (Journal Indexed in SCI)
- X. **Mixing induced by a transversely oscillating circular cylinder in a straight channel**  
Celik B., Beskok A.  
PHYSICS OF FLUIDS, vol.21, no.7, 2009 (Journal Indexed in SCI)
- XI. **Micro-scale synthetic-jet actuator flow simulation with characteristic-based-split method**  
Çelik B., Edis F. O.  
AIRCRAFT ENGINEERING AND AEROSPACE TECHNOLOGY, vol.81, no.3, pp.239-246, 2009 (Journal Indexed in SCI)
- XII. **Flow past an oscillating circular cylinder in a channel with an upstream splitter plate**  
Celik B., Akdag U., GÜNEŞ S., Beskok A.  
PHYSICS OF FLUIDS, vol.20, no.10, 2008 (Journal Indexed in SCI)
- XIII. **Computational investigation of micro backward-facing step duct flow in slip regime**  
Çelik B., Edis F. O.  
NANOSCALE AND MICROSCALE THERMOPHYSICAL ENGINEERING, vol.11, pp.319-331, 2007 (Journal Indexed in SCI)
- XIV. **Analysis of fluid flow through micro-fluidic devices using characteristic-based-split procedure**  
Celik B., Edis F. O.  
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS, vol.51, pp.1041-1057, 2006 (Journal Indexed in SCI)

## Articles Published in Other Journals

- I. **Noise Reduction of Open Cavities by Passive Flow Control Methods at Transonic Speeds using OpenFOAM**  
Demir O., Çelik B., Güleren K. M.  
Havacılık ve Uzay Teknolojileri Dergisi, vol.14, no.2, pp.193-208, 2021 (Other Refereed National Journals)
- II. **An open-source hypersonic solver for non-equilibrium flows**  
Vatansever D., Çelik B.  
Journal of Aeronautics and Space Technologies, vol.14, no.1, pp.35-53, 2021 (Other Refereed National Journals)
- III. **A 2-D Finite Volume Navier-Stokes Solver for Supersonic Flows**  
Türk A. G. , Çelik B.  
Anadolu Üniversitesi Bilim ve Teknoloji Dergisi :A-Uygulamalı Bilimler ve Mühendislik, vol.18, pp.1042-1056, 2017 (Other Refereed National Journals)
- IV. **Conjugate Heat Transfer Characteristics of Laminar Flows Through a Backward Facing Step Duct**  
Çelik B.  
Süleyman Demirel Üniversitesi Fen Bilimleri Enstitüsü Dergisi, vol.21, pp.820, 2017 (Other Refereed National Journals)
- V. **Conjugate Heat Transfer Computations Via lattice Boltzmann Method**  
Spinelli G. G. , Çelik B.  
Havacılık ve Uzay Teknolojileri Dergisi, vol.10, pp.49-59, 2017 (Other Refereed National Journals)
- VI. **Propulsive Force of a Heaving-Plunging Rigid Airfoil with Thickness**

Çelik B., Pamuk B., Tan M., Gülçat Ü.

Havacılık ve Uzay Teknolojileri Dergisi, vol.10, pp.55-65, 2017 (Other Refereed National Journals)

VII. **Mikro boyuttaki ters basamak geometrisi içindeki akışın KTA yöntemiyle analizi**

ÇELİK B., EDİS F. O.

İTÜ Dergisi Seri D: Mühendislik, vol.5, no.6, pp.49-60, 2006 (Other Refereed National Journals)

## Books & Book Chapters

I. **Characterization of Chaotic Stirring and Mixing Using Numerical Tools**

Qian S., ÇELİK B., Beskok A.

in: Microfluidics and Nanofluidics Handbook: Fabrication, Implementation, and Applications, Sushanta K. Mitra and Suman Chakraborty, Editor, CRC Press, Boca Raton, Florida, pp.195-214, 2011

## Refereed Congress / Symposium Publications in Proceedings

I. **Thermal Analyses for a Simplified Medium-Voltage Switchgear: Numerical and Experimental Benchmark Studies**

Seker A. E. , Sakaci E. A. , Deniz A., ÇELİK B., YILDIRIM D.

International Conference on Electrical and Electronics Engineering ELECO, Turkey, 28 - 30 November 2019

II. **An Overset Grid Based Adaptive Mesh Refinement Algorithm**

Elhajj Ali Barada M., ÇELİK B.

10th ANKARA INTERNATIONAL AEROSPACE CONFERENCE, 18 - 20 September 2019

III. **High Enthalpy Reacting Flow Analyses for a Double Wedge Geometry**

VATANSEVER D., ÇELİK B.

OpenFOAM Workshop 2019, 23 - 26 July 2019

IV. **Investigation of Shock wave -boundary layer interactions over a wing via OpenFOAM**

biçer b., Metin Ç. A. S. , ÇELİK B.

OpenFOAM Workshop 2019, 23 - 26 July 2019

V. **Three-dimensionality of Double Wedge Flow at Hypersonic Speeds**

DURNA A. S. , ÇELİK B.

the 32nd International Symposium on Shock Waves (ISSW32), 14 - 19 July 2019

VI. **Noise reduction of Open Cavities by Passive Flow Control Methods at Transonic Speeds Using OpenFOAM**

Demir O., ÇELİK B., GÜLEREN K. M.

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

VII. **Conjugate Heat Transfer Problems via a lattice Boltzmann solver on CPU and GPU: A Performance Comparison**

Spinelli G. G. , ÇELİK B.

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

VIII. **A Two-Dimensional Central Non-Oscillatory Scheme for Inviscid Compressible Flows**

Spinelli G. G. , ÇELİK B.

4th World Congress on Momentum, Heat and Mass Transfer (MHMT'19), 10 - 12 April 2019

IX. **Thermal Management Process in Automotive Exterior Lighting Products**

Gözütok O., ÇELİK B.

IV. International Congress on Natural and Engineering Sciences, 9 - 12 November 2018

X. **Transonik Akışlarda Girdap Üreteçlerinin Kavite Gürültüsüne Etkisi**

Demir O., ÇELİK B., GÜLEREN K. M.

7. Ulusal Havacılık ve Uzay Konferansı, Turkey, 12 - 14 September 2018

XI. **Hipersonik akışta iki açılı rampa etrafındaki akışın hesaplamalı yöntemlerle üç boyutluluğunun**

**incelenmesi**

DURNA A. S. , ÇELİK B.

VII. Ulusal Havacılık ve Uzay Konferansı (UHUK), Samsun, Turkey, 12 - 14 September 2018

- XII. **Numerical simulation of unsteady shock-boundary layer interaction at hypersonic speeds**  
DURNA A. S. , ÇELİK B.  
Symposium on Advances in Thermal Fluid Sciences, İzmir, Turkey, 26 - 28 July 2018
- XIII. **Conjugate Heat Transfer Computations with lattice Boltzmann Method and Comparison its Results with Finite Volume Method**  
Spinelli G. G. , ÇELİK B.  
9th Ankara International Aerospace Conference, Ankara, Turkey, 20 - 22 September 2017, pp.59
- XIV. **Hipersonik Akışta İki Açılı Rampa Etrafındaki Akışın Hesaplamalı Yöntemlerle Modellenmesi**  
DURNA A. S. , ÇELİK B.  
VI. Ulusal Havacılık ve Uzay Konferansı, Kocaeli, Turkey, 28 - 30 September 2016, pp.139
- XV. **Shock boundary layer interaction and surface heat flux distribution on a double wedge at M 7**  
DURNA A. S. , ÇELİK B.  
11th European Fluid Mechanics Conference, 12 - 16 September 2016
- XVI. **Shock Interaction Mechanism for 3 D Laminar Hypersonic flow over a Double Wedge**  
DURNA A. S. , ÇELİK B.  
9th International Conference on Computational Fluid Dynamics, 11 - 15 July 2016
- XVII. **Induced Shock Wave Laminar Boundary Layer Interaction**  
Avşar H., ÇELİK B.  
ECCOMAS Congress 2016 - European Congress on Computational Methods in Applied Sciences and Engineering, Creteil, France, 5 - 10 June 2016
- XVIII. **Heat And Mass Transfer Characteristics of a Micro Serpentine Channel with a Viscoelastic Coolant**  
Ozan O., ÇELİK B., ŞAHİN M.  
8th International Conference on computational heat and mass transfer, 25 - 28 May 2015
- XIX. **Hypersonic flows of air and nitrogen over a double wedge geometry**  
At A., ÇELİK B.  
8th International Conference on Computational Heat and Mass Transfer, İstanbul, Turkey, 25 - 28 September 2015, pp.129
- XX. **GPU accelerated multi block lattice Boltzmann solver for viscous flow problems**  
Spinelli G., ÇELİK B.  
8th Ankara International Aerospace Conference, Ankara, Turkey, 10 - 12 September 2015
- XXI. **Conjugate heat transfer analysis for internally cooled solid structure**  
Topbaş B. S. , ÇELİK B.  
20. ULUSAL ISI BİLİMİ VE TEKNİĞİ KONGRESİ, Balıkesir, Turkey, Balıkesir, Turkey, 2 - 05 September 2015
- XXII. **Heat and Mass Transfer Characteristics of a Micro Serpentine Channel with a Viscoelastic 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
- XXIII. **Çırpan ince kanatta ortalama itki kuvvetinin sayısal analizi**  
Pamuk B., ÇELİK B., Gülçat Ü.  
V. Ulusal Havacılık ve Uzay Konferansı, Kayseri, Turkey, 8 - 10 September 2014, pp.30
- XXIV. **Computational simulations of shock wave laminar boundary layer interaction**  
Avşar H., At A., ÇELİK B.  
7th Ankara International Aerospace Conference, Ankara, Turkey, 11 - 13 September 2013, pp.147
- XXV. **Düz bir kanal içerisinde bir çember yayı boyunca basit harmonik harekete zorlanan silindirin meydana getirdiği akış**  
Koyun E., ÇELİK B.  
XVIII. Ulusal Mekanik Kongresi, Manisa, Turkey, 26 - 30 August 2013, pp.384-391
- XXVI. **Bir Çırpan Kanat Etrafında Meydana Gelen Girdap Mekanizmasının İncelenmesi**

- DURNA A. S. , ÇELİK B., MISIRLIOĞLU A.  
IV. Ulusal Havacılık ve Uzay Konferansı, İstanbul, Turkey, 12 - 14 September 2012, pp.145
- XXVII. **Vortex wake formation and its effects on thrust and propulsive efficiency for an oscillating airfoil**  
DURNA A. S. , ÇELİK B., MISIRLIOĞLU A.  
ICCFD 2012: International Conference on Computational Fluid Dynamics, 22 - 23 August 2012
- XXVIII. **Mikro-Akışlı sistemlerde Elektrokinetik Taşınım**  
Beşkok A., ÇELİK B.  
II: Ulusal Havacılık ve Uzay Konferansı, İstanbul, Turkey, 15 - 17 October 2008
- XXIX. **Mixing potential of an oscillating circular cylinder in a micro channel**  
ÇELİK B., AKDAĞ Ü., Beşkok A.  
American Physical Society, 60th Annual Meeting of the Division of Fluid Dynamics, 18 - 20 October 2007
- XXX. **Flow over a micro backward facing step using a finite element method**  
ÇELİK B., EDİS F. O.  
13th conference on finite elements for flow problem, Swansea, United Kingdom, 4 - 06 April 2005
- XXXI. **Şekil değiştiren bir ağ üzerinde CBS sonlu elemanlar metodu kullanılarak sentetik mikro jet akışı analizi**  
ÇELİK B., EDİS F. O. , MISIRLIOĞLU A.  
XIII. Ulusal Mekanik Kongresi, Gaziantep, Turkey, 08 September 2003 - 12 September 2013, pp.311-319
- XXXII. **Analysis of micro synthetic jets using CBS finite element method on moving deforming grid**  
ÇELİK B., EDİS F. O. , MISIRLIOĞLU A.  
International Symposium on Transient Convective Heat and Mass Transfer, İzmir, Turkey, 17 - 22 August 2003, pp.417-425
- XXXIII. **Implementation of pseudo-second order velocity interpolation within the characteristic based split procedure**  
ASLAN A. R. , EDİS F. O. , ÇELİK B.  
ECCOMAS CFD 2001, Swansea, United Kingdom, 4 - 07 September 2001

## Expert Reports

- STO-TR-AVT-205 - Assessment of Predictive Capabilities for Aerodynamic Heating of Hypersonic Systems**  
KNIGHT D., Çelik B., LANI A., REIMANN B., LEVIN D., ROSA D. D. , PEZZELLA G., CANDLER G., NOMPILIS I., KOMIVES J., et al.  
NATO Science and Technology Organization, pp.51, Washington, 2016

## Supported Projects

- Çelik B., Project Supported by Higher Education Institutions, Hipersonik akışta şok-şok ve şok-sınır tabaka etkileşim mekanizmalarının incelenmesi ve ortaya çıkan yüzey ısı transferi açısından değerlendirilmesi, 2016 - 2018
- Çelik B., Project Supported by Higher Education Institutions, Hipersonik sistemlerde Karşılaşılan Aero Termodinamik Isınmanın Önce den Tahmin Edilebilirliğinin Değerlendirilmesi, 2014 - 2018
- Çelik B., Project Supported by Higher Education Institutions, Eğik Şokun indüklediği Laminer Sınır Tabaka ayrılmasının Hesaplamalı Yöntemlerle İncelenmesi, 2014 - 2017
- Çelik B., Project Supported by Higher Education Institutions, Gaz Türbinlerinde Birleşik Isı Geçişi, 2013 - 2017
- Çelik B., Project Supported by Higher Education Institutions, Akışkan-Yapı Etkileşimi Benzetimleri için Grafik İşleme Birimleri Üzerinde Çoklu Blok Yaklaşımı Kullanan Etkin Lattice Boltzmanın Metodu Çözücüsü, 2012 - 2015

## Scientific Refereeing

JOURNAL OF FLUID MECHANICS, SCI Journal, June 2020  
JOURNAL OF FLUID MECHANICS, SCI Journal, May 2020  
PHYSICS OF FLUIDS, SCI Journal, April 2020  
PHYSICS OF FLUIDS, SCI Journal, February 2020  
PHYSICS OF FLUIDS, SCI Journal, January 2020  
PHYSICS OF FLUIDS, SCI Journal, September 2019  
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JOURNAL OF FLUIDS ENGINEERING-TRANSACTIONS OF THE ASME, SCI Journal, February 2019  
PHYSICS OF FLUIDS, SCI Journal, November 2018  
JOURNAL OF FLUIDS AND STRUCTURES, SCI Journal, November 2018  
PHYSICS OF FLUIDS, SCI Journal, August 2018  
PHYSICS OF FLUIDS, SCI Journal, April 2018  
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JOURNAL OF FLUIDS AND STRUCTURES, SCI Journal, March 2018  
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## Citations

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