

Vassilis Theofilis

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Faculty of Aerospace Engineering
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Researcher ID

ORCID ID

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PERSONAL DATA

Birth Date January 17, 1963
Civic Status Married, three children (born 1983, 1996 and 2000)
Address 40 Devonshire Rd, Oxton, CH43 1TW, United Kingdom
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EDUCATION

Ph.D. Aeronautical Engineering (1991)
Dept. of Aeronautical Engineering, University of Manchester, UK
Thesis Title: A numerical study of the stability of the swept attachment line boundary layer
PDF at <https://ethos.bl.uk/OrderDetails.do?did=5&uin=uk.bl.ethos.617378>
Advisors: Prof. P. W. Duck, Prof. D. I. A. Poll
M.Sc. Applied Mathematics & Fluid Mechanics (1988)
Dept. of Mathematics, University of Manchester, UK
Advisor: Prof. P. W. Duck
B.Sc. Physics (1984)
Dept. of Physics, University of Patras, Greece

PROFESSIONAL EXPERIENCE

2024- Professor, Faculty of Aerospace Engineering, Technion, Israel
2019-2024 Chair of Aerospace Engineering, University of Liverpool, UK
2016-2023 Profesor Titular, University of São Paulo, Brasil
2015-2016 Professor of Fluid Mechanics, Universidad Politécnica de Madrid, Spain
2007-2015 Research Professor of Fluid Mechanics, Universidad Politécnica de Madrid
2003-2006 Ramón y Cajal Fellow, School of Aeronautics, Universidad Politécnica de Madrid
1998-2003 Research Scientist, DLR Institute of Fluid Mechanics, Göttingen, Germany
1997 Alexander von Humboldt Fellow, DLR Institute of Fluid Mechanics, Göttingen, Germany
1995-1996 Post-doctoral Researcher, DLR Institute of Fluid Mechanics, Göttingen, Germany
1991-1995 Post-doctoral Researcher, Dept. of Applied Mathematics, University of Twente, Netherlands

HONORS & AWARDS

2025 Fellow, Royal Aeronautical Society
2018 Ludwig Prandtl Memorial Lecture, GAMM
2009- Associate Fellow, American Institute of Aeronautics and Astronautics
2003-2006 Ramón y Cajal Research Fellow, Universidad Politécnica de Madrid, Spain
1997 Alexander von Humboldt Fellow, DLR Göttingen, Germany

¹ Sources: Google Scholar / Scopus / Web of Science

VISITING APPOINTMENTS

2025-	Joint Chair, Turbomachines and Fluid Dynamics, Technical University of Crete, Greece
2015-2019	Visiting Professor, Universidade Federal Fluminense, Rio de Janeiro, Brasil
2013-2015	Visiting Professor, Universidade São Paulo, Brasil
2012	Fachhochschule Joanneum, Graz, Austria
2009	Visiting Research Professor, Univ. of Arizona, USA
2008-	Visiting Research Associate, California Institute of Technology, USA
2000-2003	Visiting Professor, Cranfield Univ., UK

LINGUISTIC SKILLS

English, German & Spanish: fluent; Portuguese: basic; Greek: mother tongue

TEACHING ACTIVITIES

- Undergraduate Courses:
 - Flow Instability and Control. Part II: Numerical Implementation. Technion and EuroTeQ. <https://euroteq.eurotech-universities.eu> (2024 –)
 - Engineering Mathematics and Computing. University of Liverpool. Course coordinator (2023 – 2024)
 - Fluid Mechanics. Universidad Politécnica de Madrid. Teaching (in Spanish) 2nd year Fluid Mechanics I and II courses (2010 – 2016)
 - Fluid Mechanics. Joanneum University of Applied Sciences, Graz, Austria. Coordinating and teaching (in German) 3rd year course (2012)
 - Computational Fluid Dynamics. Universidad Politécnica de Madrid, Spain. Coordinating and teaching (in Spanish) 3rd and 4th year course (2011 – 2016)
- Postgraduate Courses:
 - Flow Instability and Control. Part I: Theoretical Foundations. Technion and EuroTeQ <https://euroteq.eurotech-universities.eu> (2024 –)
 - Advanced Aerodynamics. University of Liverpool. Course coordinator. (2017-)
 - Advanced Fluid Mechanics. University of Liverpool. Course coordinator. (2016-)
 - Turbulence. Universidad Politécnica de Madrid. Teaching at M.Sc. and Ph.D. levels, with J. Jiménez and R. Gómez Blanco (2003 – 2014)
 - Numerical Methods in Fluid Dynamics. Universidad Politécnica de Madrid. Teaching at M.Sc. and Ph.D. levels, with J. Jiménez and R. Gómez Blanco (2003 – 2014)
 - M.Sc. in Flight Testing. Universidad Politécnica de Madrid. Teaching Advanced Fluid Mechanics, with R. Gómez Blanco et al. (2009)
 - M.Sc. in Industrial Mathematics. Universidad Politécnica de Madrid, Univ. Carlos III, Univ. de Vigo, Univ. Santiago de Compostela. Teaching Flow Instability (2014 - 2016)
- Specialist Courses:
 - Global Flow Instability. Part I: Theory and Implementation; & Part II: Applications. Lecture Series “Stability and sensitivity methods for flow control and industrial design”, Von Karman Institute for Fluid Dynamics, Brussels, Belgium, December 6-8, 2022.
 - Global Linear Stability Theory & Numerical Methods for Linear Instability Analysis. AIM-ED Advanced Instability Methods–Education. 3rd International Graduate School on Stability, Transition to Turbulence and Flow Control. UniSinos, São Leopoldo, Brazil. September 15-19, 2014.
 - Global Flow Instability. Part I: Theory and Implementation; & Part II: Applications. Lecture Series “Progress in Flow Instability Analysis and Laminar-Turbulent Transition Modelling”, Von Karman Institute for Fluid Dynamics, Brussels, Belgium, June 2-6, 2014.
 - Numerical Methods for Global Linear Instability Analysis. AIM-ED Advanced Instability Methods – Education. 1st International Graduate School on Stability, Transition to Turbulence and Flow Control. University of Cambridge, UK, August 22 – 27, 2011

PROFESSIONAL ACTIVITIES

- **Editor in Chief:**
Theoretical and Computational Fluid Dynamics, ISSN: 0935-4964 – from Jan 1, 2022
- **Associate Editor:**
Aerospace Science and Technology, Impact Factor: 5.1, ISSN: 1270-9638 (2012 – 2022)
Journal of Aerospace Technology and Management, ISSN: 2175-9146 (since 2012)
Theoretical and Computational Fluid Dynamics, ISSN: 0935-4964 (2014 – 2022)
Aerospace Science and Technology, ISSN: 1270-9638 (Guest Editor 2014)
Theoretical and Computational Fluid Dynamics, ISSN: 0935-4964 (Guest Editor 2009, 2021)
- **Reviewer:**
Aerospace Science and Technology, AIAA Journal, Computers & Fluids, European Journal of Mechanics B / Fluids, Europhysics Letters, Fluid Dynamics Research, International Journal of Numerical Methods in Fluids, Journal of Computational Physics, Journal of Engineering Mathematics, Journal of Fluid Mechanics, Philosophical Transactions of the Royal Society London A, Physics of Fluids, Quarterly Journal of Applied Mathematics and Mechanics, Theoretical and Computational Fluid Dynamics, Zeitschrift für Angewandte Mathematic and Physik
- **Professional Organizations:**
 - AIAA Fluid Dynamics Technical Committee, International Member (2007 – 2013)
 - ERCOFTAC Pilot Center “Iberia West”, Coordinator (2008 – 2016)
- **International Research Projects Evaluator:**
 - ANR – Agence National de la Recherche (France, 2011)
 - FFG – Österreichische Forschungsförderungsgesellschaft mbH (Austria, 2013)
 - EPSRC – Engineering and Physical Sciences Research Council (UK, 2010 –)
 - DFG – Deutsche Forschungsgemeinschaft (Germany, 2008)
 - Plan Nacional (Spain, 2018)
 - Shota Rustaveli National Science Foundation (Georgia, 2011)
 - SNSF – Swiss National Science Foundation (Switzerland, 2022)
- **International Computing Projects Evaluator:**
 - PRACE – Partnership for Advanced Computing in Europe (EU, 2012)
- **International Committees and NATO Membership:**
 - Representative of Germany at the Technical Advisory Committee of the Von Karman Institute, Brussels, Belgium (2002)
 - National Member representing Spain at the NATO-STO Applied Vehicles Technology Exploratory Group 136 “Hypersonic Boundary Layer Transition Prediction” (2013)
 - National Member representing Greece at the NATO STO AVT-346 “Predicting Hypersonic Boundary Layer Transition on Complex Geometries” (2020-2024)
 - National Member representing Greece at the NATO STO ET-190 “Predicting Hypersonic Boundary Layer Transition on Complex Geometries” (2016-2019)
- **Local Responsibilities:**
 - *Group Leader*, “Computational Fluid Mechanics” Group, UPM, Madrid (2009-2016)
- **Conference Organization:**
“*Global Flow Instability and Control*”, Crete, Greece:
Edition VI Sept. 2015; Edition V (with T Colonius) Sept. 2012; Edition IV (with T Colonius) Sept. 2009; Edition III (with T Colonius and A Seifert) Sept 2005; Edition II (with JM Chomaz, T Colonius and A Seifert) Sept. 2003; Edition I (with T Colonius and A Seifert) Sept. 2001
“*Instability and Control of Massively Separated Flows*” (with J. Soria), Prato, Italy, Sept. 2013; “*6th AIAA Flow Control Conference*” (Session Chair), New Orleans LA, USA, June 2012; “*42nd AIAA Fluid Dynamics Conference: Session on Global Flow Instability*”, New Orleans LA, USA, June 2012; “*ERCOFTAC Iberia West Pilot Center Meeting*”, Vigo, Spain, Oct. 2011; “*ERCOFTAC SIG-33 Progress in Transition Modelling*”, Toledo, Spain, Sept. 2011; “*6th AIAA Theoretical Fluid Mechanics Conference: Session on Global Flow Instability*”, Honolulu HI, USA, June 2011; “*38th AIAA Fluid Dynamics Conference and Exhibit*” (Session Chair), Seattle WA, USA, “*46th AIAA Aerospace Sciences Meeting*” (Session Chair), Reno NV, USA, Jan 2008; “*ECMI: Minisymposium on Global Flow Instability*”, Madrid, June 2006

POST-DOCTORAL SCHOLAR SUPERVISION

6. Dr. Wei HE (Post-Doctoral Scholar, 2017-20)

SUPPORT: Air Force Office of Scientific Research

UNIVERSITY: University of Liverpool

CURRENT EMPLOYMENT: City University, London, UK

5. Dr. Pedro PAREDES (Post-Doctoral Scholar, 2014-15)

SUPPORT: Spanish Ministry of Science and Education

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

CURRENT EMPLOYMENT: Tenured position at NIA, NASA Langley Research Center, Hampton VA, USA

4. Dr. José Miguel PÉREZ (Post-Doctoral Scholar, 2014-15)

SUPPORT: Spanish Ministry of Science and Education

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

CURRENT EMPLOYMENT: Faculty Position at Universidad Politécnica de Madrid, Spain

3. Dr. Takashi NAKAZAWA (Post-Doctoral Scholar, 2012-13)

SUPPORT: ERASMUS BEAM

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

CURRENT EMPLOYMENT: Tohoku Univ., Japan

2. Dr. Daniel RODRÍGUEZ (Post-Doctoral Scholar, 2011-13)

SUPPORT: EU-FP7 MARIE CURIE – COFUND

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

CURRENT EMPLOYMENT: Faculty Position at Universidad Politécnica de Madrid, Spain

1. Dr. Bahri UZUNOGLU (Post-Doctoral Scholar, 2001-04)

SUPPORT: Deutsche Forschungsgemeinschaft

INSTITUTE: DLR Institute of Aerodynamics and Flow Technology, Göttingen, Germany

POST-DOCTORAL CONTRACT: 2001 – 2004

CURRENT EMPLOYMENT: Faculty position at Uppsala University, Sweden

PhD STUDENT SUPERVISION

22. Mr. Vojtech Pezlar

ADVISOR: V Theofilis (primary); M Schmirler (co-advisor)

SUPPORT: EOARD/AFOSR

UNIVERSITY: Czech Technical University in Prague, Czech Republic

Ph. D. STUDY PERIOD: 2023 – 2027

21. Mr. Angelos Klothakis

TITLE: On the numerical solution of high Mach number flows

ADVISOR: I K Nikolos (primary); V Theofilis (co-advisor)

SUPPORT: ONR and NuModelling LTD

UNIVERSITY: Technical University of Crete, Greece

Ph. D. STUDY PERIOD: 2020 – 2024

Ph.D. AWARDED: September 2024

20. Mr. Kamil Dylewicz

TITLE: Examination of linear instabilities of compressible flows and numerical developments in linear stability analysis

ADVISOR: V Theofilis

SUPPORT: AFOSR and NuModelling LTD

UNIVERSITY: University of Liverpool

Ph. D. STUDY PERIOD: 2021 – 2024

Ph.D. AWARDED: January 2025

CURRENT EMPLOYMENT: Allianzversicherungen, Germany

19. Mr. Daniel Flanagan

ADVISOR: V Theofilis (primary); C-Y Huang (co-advisor)

SUPPORT: National Tsinghua University Taiwan & University of Liverpool

UNIVERSITY: University of Liverpool, School of Engineering

Ph. D. STUDY PERIOD: 2021 – 2025

18. Mr. Anton Burtsev

TITLE: Linear instability mechanisms over three-dimensional wings at low Reynolds numbers

ADVISOR: V Theofilis

SUPPORT: AFOSR & NuModelling LTD

UNIVERSITY: University of Liverpool, School of Engineering

Ph. D. STUDY PERIOD: 2018 – 2022

Ph. D. AWARDED: July 2022

CURRENT EMPLOYMENT: Post-doctoral scholar, University of Texas at Austin

17. Mr. Nicolas CERULUS

TITLE: Characterisation of the stability of compression corner geometries under supersonic flow conditions

ADVISOR: V Theofilis

SUPPORT: AFOSR & NuModelling LTD

UNIVERSITY: University of Liverpool, School of Engineering

Ph. D. STUDY PERIOD: 2017 – 2022

Ph. D. AWARDED: July 2022

16. Mr. Helio QUINTANILHA Jr

TITLE: Linear global nonmodal instability analysis of high-speed flows

ADVISOR: V Theofilis (primary); L. Alves (Co-advisor)

SUPPORT: AFOSR & NuModelling LTD

UNIVERSITY: University of Liverpool, School of Engineering

Ph. D. STUDY PERIOD: 2017 – 2020

Ph. D. AWARDED: June 2021

CURRENT EMPLOYMENT: Deloitte Berlin, Germany

15. Mr. Osama MAKLAD

TITLE: Influence of fluid-structure interaction on human eye biomechanics under air puff non-contact tomometry

ADVISOR: A. Elsheikh (primary); V Theofilis (Co-advisor)

SUPPORT: University of Liverpool

UNIVERSITY: University of Liverpool, School of Engineering

Ph. D. STUDY PERIOD: 2016 – 2019

Ph. D. AWARDED: June 2019

CURRENT EMPLOYMENT: Faculty position at Liverpool John Moores University, UK

14. Ms. Qiong LIU

TITLE: Global instability analysis and control of three-dimensional long open cavity flow

ADVISOR: V Theofilis (primary); F Gómez (co-advisor)

SUPPORT: Chinese Scholarship Foundation

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

Ph. D. STUDY PERIOD: 2012 – 2015

Ph. D. AWARDED: April 2016

CURRENT EMPLOYMENT: Faculty position at New Mexico State University, USA

13. Mr. Wei HE

TITLE: Linear Instability Mechanisms on Airfoils at Low Reynolds Number: Massive Separation, Wingtip Vortex Formation and the Trailing Vortex System.

ADVISOR: V Theofilis

SUPPORT: Chinese Scholarship Foundation

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

Ph.D. STUDY PERIOD: 2012 – 2015

Ph.D. AWARDED: July 2016

CURRENT EMPLOYMENT: City University, London, UK

12. Ms Mamta JOTKAR

TITLE: Effects of wall-geometry on the stability of channel flow, and of variable properties on film flow

ADVISOR: Rama Govindarajan (primary); V Theofilis (co-advisor)

SUPPORT: JNCASR, Bangalore, India

UNIVERSITY: Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore, India

Ph.D. STUDY PERIOD: 2011 – 2016

CURRENT EMPLOYMENT: Post-doctoral scholar, Universidad Politécnica de Madrid, Spain

11. Mr. Juan Ángel TENDERO VENTANAS

TITLE: Instability analysis of vortex systems in lifting-body wakes

ADVISOR: V Theofilis

SUPPORT: Program FPI, Ministry of Science and Education, Spain

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

Ph.D. STUDY PERIOD: 2010 – 2014

Ph.D. AWARDED: July 2016

CURRENT EMPLOYMENT: Faculty position at Universidad Cadiz, Spain

10. Mr. Pedro PAREDES GONZÁLEZ

TITLE: Advances in global instability computations: from incompressible to hypersonic flow

ADVISOR: V Theofilis

SUPPORT: Universidad Politécnica de Madrid and AFOSR

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

Ph.D. STUDY PERIOD: 2009 – 2013

Ph.D. AWARDED: March 2014

DISTINCTIONS: #198,328 in September 2022 Updated science-wide author databases of standardized citation indicators – Single Year

CURRENT EMPLOYMENT: National Aerospace Institute, NASA Langley Research Center, Hampton VA, USA

9. Ms Soledad LE CLAINCHE MARTÍNEZ

TITLE: Instability and topology bifurcations on a hemisphere-cylinder at high angle of attack

ADVISOR: V Theofilis (primary); D Rodríguez (co-advisor)

SUPPORT: Co-funded by EU-FP7 and UPM

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

Ph.D. STUDY PERIOD: 2010 – 2013

Ph.D. AWARDED: Dec. 2013

DISTINCTIONS: #198,925 in September 2022 Updated science-wide author databases of standardized citation indicators – Single Year

CURRENT EMPLOYMENT: Faculty position at Universidad Politécnica de Madrid, Spain

8. Mr. Francisco GÓMEZ CARRASCO

TITLE: Matrix-free time-stepping methods for the solution of TriGlobal instability problems

ADVISOR: V Theofilis (primary); Raquel Gómez (co-advisor)

SUPPORT: Instituto Nacional de Técnica Aeroespacial, Spain

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

Ph.D. STUDY PERIOD: 2009 – 2013

Ph.D. AWARDED: Sept. 2013

CURRENT EMPLOYMENT: RavenPack

7. Mr. José Miguel PÉREZ PÉREZ

TITLE: Efficient numerical methods for global linear instability. Analysis and modelling of non-orthogonal swept attachment-line boundary layer flow

ADVISOR: V Theofilis (primary); D Rodríguez (co-advisor)

SUPPORT: Ministry of Science and Innovation, Spain

UNIVERSITY: Universidad Politécnica de Madrid

Ph.D. AWARDED: Sept. 2012

CURRENT EMPLOYMENT: Faculty position at Universidad Politécnica de Madrid, Spain

6. Mr. Elmer GENNARO; Co-advisor: Prof. Marcello de Medeiros (U São Paulo)

TITLE: Analise de Estabilidade Global de Escoamentos Compresíveis

ADVISOR: V Theofilis (primary); MAF Medeiros (co-advisor)

SUPPORT: CNPq, Brazil

UNIVERSITY: Universidade São Paulo, Brasil

Ph.D. AWARDED: June 2012

CURRENT EMPLOYMENT: Faculty position at Universidade Estadual Paulista, Brasil

5. Mr. Daniel RODRÍGUEZ ÁLVAREZ

TITLE: Global Instability and Control of Laminar Separation Bubbles

ADVISOR: V Theofilis

SUPPORT: AFOSR and UPM

UNIVERSITY: Universidad Politécnica de Madrid, School of Aeronautics

Ph.D. AWARDED: June 2010

DISTINCTIONS: UPM Ph.D. First Prize, GRADE: Summa Cum Laude

CURRENT EMPLOYMENT: Faculty position at Universidad Politecnica de Madrid, Spain

4. Mr. Javier DE VICENTE BUENDÍA; Co-Advisor: Prof. E. Valero

TITLE: Spectral multidomain for BiGlobal stability calculations in compressible flow over open cavity

ADVISOR: V Theofilis

SUPPORT: AFOSR and UPM

UNIVERSITY: Universidad Politécnica de Madrid, School of Aeronautics

Ph.D. AWARDED: June 2010

DISTINCTIONS: GRADE: Summa Cum Laude

CURRENT EMPLOYMENT: Faculty position at Universidad Politécnica de Madrid, Spain

3. Mr. Michael BROADHURST

TITLE: Vortex stability and breakdown : direct numerical simulation and stability analysis using BiGlobal and parabolised formulations

ADVISOR: S. J. Sherwin (primary); V Theofilis, HM Blackburn, S Mughal (co-advisors)
SUPPORT: McLaren Racing
UNIVERSITY: Imperial College London, Dept. of Aeronautics
Ph.D. AWARDED: December 2007
CURRENT EMPLOYMENT: Red Bull Racing, Principal Aerodynamicist

2. Mr. Nadir ABDESSEMED

TITLE: Spectral/hp element stability analysis of Low Pressure Turbine flows
ADVISOR: S. J. Sherwin (primary); V Theofilis (co-advisor)
SUPPORT: AFOSR and ICL
UNIVERSITY: Imperial College London, Dept. of Aeronautics
Ph.D. AWARDED: March 2007
CURRENT EMPLOYMENT: Transsolar Energietechnik GmbH, Germany

1. Mr. Andreas KARABIS

TITLE: Numerical study of linear inviscid stability of a compressible supersonic boundary layer over a cone
ADVISOR: N. Kafoussias (primary); V Theofilis (co-advisor)
UNIVERSITY: University of Patras, Greece, Dept. of Mathematics
Ph.D. AWARDED: June 2000
CURRENT EMPLOYMENT: Mapi Group, Netherlands

MSc STUDENT SUPERVISION

10. Mr. Nathan DUGGINS

SUPPORT: University of Liverpool

UNIVERSITY: University of Liverpool, School of Engineering

M.Sc. AWARDED: September 2018

9. Mr. Panagiotis BELESOTIS

SUPPORT: University of Liverpool

UNIVERSITY: University of Liverpool, School of Engineering

M.Sc. AWARDED: September 2017

8. Mr. An BO

SUPPORT: Chinese Scholarship Foundation

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

M.Sc. AWARDED: February 2015

7. Ms. Qiong LIU

SUPPORT: Chinese Scholarship Foundation

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

M.Sc. AWARDED: October 2013

6. Mr. Wei HE

SUPPORT: Chinese Scholarship Foundation

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

M.Sc. AWARDED: October 2013

5. Mr. Juan Ángel TENDERO VENTANAS

SUPPORT: Program FPI, Ministry of Science and Education, Spain

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

M.Sc. AWARDED: October 2012

4. Mr. Pedro PAREDES GONZÁLEZ

SUPPORT: Universidad Politécnica de Madrid

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

M.Sc. AWARDED: October 2011

3. Ms Soledad LE CLAINCHE MARTÍNEZ

SUPPORT: Co-funded by EU-FP7 and UPM

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

M.Sc. AWARDED: June 2012

2. Mr. Francisco GÓMEZ CARRASCO; Co-advisor: Dr. Raquel Gómez (INTA)

SUPPORT: Instituto Nacional de Técnica Aeroespacial, Spain

UNIVERSITY: Universidad Politécnica de Madrid, School of Aerospace Engineering

M.Sc. AWARDED: October 2011

1. Mr. Daniel RODRÍGUEZ ÁLVAREZ

TITLE: Global Instability and Control of Laminar Separation Bubbles

SUPPORT: AFOSR and UPM

UNIVERSITY: Universidad Politécnica de Madrid, School of Aeronautics

M.Sc. AWARDED: October 2009

RESEARCH GRANTS
(Won as Principal Investigator – With Public Competitive Funding)

29. PROJECT TITLE: Next-Gen Waveriders: Design, Analysis, Simulation, Ground Experimentation and Flight Testing
FUNDING AGENCY: Center for High Speed Flight, Technion, Israel
COLLABORATOR: Ioannis Nikolos, Technical University of Crete, Greece
DURATION: 2025 – 2027
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: 2034786

28. PROJECT TITLE: Linear modal and non-modal instability analyses of high-speed laminar separated flow over complex geometries. Part II: The HIFiRE-1, ROTEX-T and Oberkampf vehicles
FUNDING AGENCY: European Office of Aerospace Research and Development, Air Force Office of Scientific Research, USA
COLLABORATOR: Leonardo Alves, Universidade Federal Fluminense, Brazil
DURATION: 2023 – 2026
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: FA8655-23-1-7031

27. PROJECT TITLE: Kinetic Treatment of Sources and Mechanisms that Drive Unsteady, Shock-dominated Flow Instability
FUNDING AGENCY: Office of Naval Research, USA
Co-PI: Debbie Levin, University of Illinois at Urbana Champaign, USA
DURATION: 2023 – 2027
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: N00014-23-1-2839

26. PROJECT TITLE: Multiscale modelling of unsteady shock-boundary layer hypersonic flow instabilities
FUNDING AGENCY: Office of Naval Research, USA
Co-PI: Debbie Levin, University of Illinois at Urbana Champaign, USA
DURATION: 2020 – 2023
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: N00014-20-1-2195

25. PROJECT TITLE: Laminar-turbulent transition prediction on three-dimensional wings, including airfoil shape optimization
FUNDING AGENCY: Southern Office of Aerospace Research and Development & Air Force Office of Scientific Research, USA
COLLABORATOR: Julio Meneghini, Universidade São Paulo, Brazil
DURATION: 2017 – 2019
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: FA9550-22-1-0033

24. PROJECT TITLE: Flow Physics and Control of 3D Separation on Finite Span, Tapered and Swept Wings
FUNDING AGENCY: Air Force Office of Scientific Research, USA
COLLABORATORS: Michael Amitay, Rensselaer Polytechnic Institute, USA; Kunihiro Taira, UCLA, USA

DURATION: 2021 – 2023
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: FA9550-21-1-0174

23. PROJECT TITLE: Linear modal and non-modal instability analyses of high-speed laminar separated flow over complex geometries. Part I: Algorithmic developments
FUNDING AGENCY: European Office of Aerospace Research and Development, Air Force Office of Scientific Research, USA
DURATION: 2020 – 2021
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: FA8655-20-1-7022

22. PROJECT TITLE: Flow Physics and Control of 3D Separation on 3D Swept Wings
FUNDING AGENCY: Air Force Office of Scientific Research, USA
COLLABORATORS: Michael Amitay, Rensselaer Polytechnic Institute, USA; Kunihiro Taira, UCLA, USA
DURATION: 2017 – 2019
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: FA9550-17-1-0222

21. PROJECT TITLE: Global Modal and Non-modal instability analyses of Shock-Induced Separation Bubbles
FUNDING AGENCY: Air Force Office of Scientific Research, USA
DURATION: 2016 – 2018
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: FA9550-17-1-0115

20. PROJECT TITLE: Global Transient Growth Instability Mechanisms with Application to Flow over an Elliptic Cone
FUNDING AGENCY: Air Force Office of Scientific Research, USA
DURATION: 2015 – 2018
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: FA9550-15-1-0387

19. PROJECT TITLE: Flow Physics of Stall-and Separation Cells and Their Control
FUNDING AGENCY: Air Force Office of Scientific Research, USA
DURATION: 2013 – 2016
CO-PI: Prof. Michael Amitay, Rensselaer Polytechnic Institute, USA
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: FA9550-13-1-0059

18. PROJECT TITLE: Mejoras Del Rendimiento Aerodinámico De Alas Mediante Control De Mecanismos De Inestabilidad Global (Improvements Of Aerodynamic Performance Of Wings Via Control Of Global Instability Mechanisms)
FUNDING AGENCY: Plan Nacional – Ministerio de Ciencia e Innovación, Spain
DURATION: 2013 – 2016
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: TRA2012-34148

17. PROJECT TITLE: PSE-3D Instability Analysis and Application to Flow Over an Elliptic Cone
FUNDING AGENCY: European Office of Aerospace Research and Development, USA
DURATION: 2012 – 2015
AWARD AMOUNT: not disclosed

16. PROJECT TITLE: Fly High

FUNDING AGENCY: European Union – LLP

DURATION: 2011 – 2013

PROJECT REFERENCE: 518156-LLP-1-2011-1-AT-COMENIUS-CMP

AWARD AMOUNT: not disclosed

PI: Bruno Wiesler (Fachhochschule Joanneum, Austria); Theofilis (UPM)

15. PROJECT TITLE: ICOMASEF: Instability and Control of Massively Separated Flows

FUNDING AGENCY: European Union, EU-FP7-PEOPLE-IRSES

DURATION: 2010 – 2012

AWARD AMOUNT: not disclosed

PROJECT REFERENCE: EU-FP7-PEOPLE-IRSES-ICOMASEF-GA-247651

14. PROJECT TITLE: Metodologías Computacionales para la Predicción de Inestabilidades Globales Hidrodinámicas y Aeroacústicas en Flujos Complejos

FUNDING AGENCY: Plan Nacional – Ministerio de Ciencia e Innovación, Spain

DURATION: 2010 – 2012

AWARD AMOUNT: not disclosed

PROJECT REFERENCE: TRA2009-13648

13. PROJECT TITLE: Global instabilities in laminar separation bubbles

FUNDING AGENCY: Air Force Office of Scientific Research, USA

DURATION: 2006 – 2009

AWARD AMOUNT: not disclosed

PROJECT REFERENCE: FA8655-06-1-3066

12. PROJECT TITLE: PROCARA – Procesos Computacionales para Predicción y Control de Ruido Aeroacústico

FUNDING AGENCY: Comunidad Autónoma de Madrid, Spain

DURATION: 2008 – 2008

AWARD AMOUNT: not disclosed

PROJECT REFERENCE: CCG07-UPM/AMB-2014

11. PROJECT TITLE: Far-Wake

FUNDING AGENCY: European Union, FP-6

DURATION: 2005 – 2007

PROJECT REFERENCE: EU-STREP AST4-CT-2005-012238

AWARD AMOUNT: not disclosed

PI: Thomas Leweke (IRPHE-Marseille); Theofilis (UPM)

10. PROJECT TITLE: AWIATOR

FUNDING AGENCY: European Union, FP-5, FP-6

DURATION: 2002 – 2007

PROJECT REFERENCE: G4RD-CT-2002-00836

AWARD AMOUNT: not disclosed

PI: Rolf Henke (Airbus, DE); Theofilis (DLR Göttingen)

9. PROJECT TITLE: A Unified View of Global Instability of Compressible Flow over Open Cavities

FUNDING AGENCY: EOARD – European Office for Aerospace Research and Development, UK

DURATION: 2003 – 2006

AWARD AMOUNT: not disclosed
PROJECT REFERENCE: FA8655-03-1-3059

8. PROJECT TITLE: Global Instability and Control of Low Pressure Turbine Flows
FUNDING AGENCY: Air Force Office of Scientific Research, USA
DURATION: 2003 – 2005
AWARD AMOUNT: not disclosed
PROJECT REFERENCE: F49620-03-1-0295

7. PROJECT TITLE: C-Wake – Wake vortex characterization and control
FUNDING AGENCY: European Union, FP-5
DURATION: 2001 – 2003
PROJECT REFERENCE: G4RD-CT-1999-00141
AWARD AMOUNT not disclosed
PI: J. Szodruch (Airbus, D); Theofilis (DLR Göttingen)

6. PROJECT TITLE: Beschreibung turbulenter Strömungen durch globale Strömungseigenmethoden (Description of turbulent flows via global eigenmodes)
FUNDING AGENCY: Deutsche Forschungsgemeinschaft, Germany
DURATION: 2001 – 2003
AWARD AMOUNT: Support for 1 post-doctoral researcher: **Dr. Bahri Uzunoglu**; (exact amounts unknown to researcher)

5. PROJECT TITLE: Numerical prediction of the hypersonic boundary-layer over a row of microcavities
FUNDING AGENCY: EOARD – European Office for Aerospace Research and Development, UK
DURATION: 2000 – 2001
PROJECT REFERENCE: F61775-01-WE049
AWARD AMOUNT: not disclosed

4. PROJECT TITLE: Inviscid global linear instability of compressible flow on an elliptic cylinder: algorithmic developments
FUNDING AGENCY: EOARD – European Office for Aerospace Research and Development, UK
DURATION: 2000 – 2001
PROJECT REFERENCE: F61775-00-WE069
AWARD AMOUNT: not disclosed

3. PROJECT TITLE: On steady laminar basic flows and global eigenmodes: An elliptic cone in compressible flow
FUNDING AGENCY: EOARD – European Office for Aerospace Research and Development, UK
DURATION: 1999 – 2000
PROJECT REFERENCE: F61775-99-WE049
AWARD AMOUNT: not disclosed

2. PROJECT TITLE: On numerical residuals and physical instabilities in incompressible fluid flow calculations
FUNDING AGENCY: EOARD – European Office for Aerospace Research and Development, UK
DURATION: 1999 – 2000
PROJECT REFERENCE: F61775-99-WE090
AWARD AMOUNT: not disclosed

1. PROJECT TITLE: Leading-edge boundary layer stability
FUNDING AGENCY: Fundamenteel Onderzoek der Materie, Netherlands
DURATION: 1995 – 1997
AWARD AMOUNT: Support for 1 post-graduate student: Mr. Ruerd Heeg; (exact amounts unknown to researcher)

RESEARCH GRANTS
(Participating As Collaborating Investigator – With Public Competitive Funding)

11. PROJECT TITLE: Control of supersonic flow instabilities with phononic materials
FUNDING AGENCY: Defense Advanced Research Projects Agency via Army Research Office, USA
DURATION: April – November 2023
PROJECT REFERENCE: W911NF2310069
PI: Katie Matlack, University of Illinois at Urbana Champaign, USA
AWARD AMOUNT: USD 334,503

10. PROJECT TITLE: The under-expanded impinging jet: An important self-forcing flow
FUNDING AGENCY: Australian Research Council
LOCATION: Monash University, Melbourne, Australia
DURATION: 2016 – 2019
PROJECT REFERENCE: DP160102833
PI: Julio Soria
AWARD AMOUNT: AUD 450,000

9. PROJECT TITLE: Ciência Sem Fronteiras
FUNDING AGENCY: CNPq: Ciência Sem Fronteiras Proj. Num. 401605/2012-4
LOCATION: Universidade São Paulo, São Carlos, Brasil
DURATION: 2013-2015
Principal Investigator: Marcello de Medeiros
AWARD AMOUNT: BReais 367,950.25 (~EUR 121,247.59)

8. PROJECT TITLE: Multiscale dynamics of turbulent flows (MultiFlow)
FUNDING AGENCY: European Research Council (ERC)
DURATION: 2012 – 2016
PI: Javier Jiménez
AWARD AMOUNT: EUR 2,200,000.00

7. PROJECT TITLE: Impinging supersonic jets: instabilities and control
FUNDING AGENCY: Australian Research Council
LOCATION: Monash University, Melbourne, Australia
DURATION: 2012 – 2015
PROJECT REFERENCE: DP130104003
PI: Julio Soria
AWARD AMOUNT: AUD 500,000.00 (~EUR 345,536.28)

6. PROJECT TITLE: ANADE
FUNDING AGENCY: EU-FP7-PEOPLE-ITN
DURATION: 2011 – 2014
PI: Eusebio Valero
AWARD AMOUNT: EUR 4,463,642.00

5. PROJECT TITLE: Simulación de turbulencia a altos números de Reynolds (Turbulence simulations at high Reynolds numbers)
FUNDING AGENCY: CICYT
DURATION: 2006 – 2009
PI: Javier Jiménez
AWARD AMOUNT: EUR 176,600.00

4. PROJECT TITLE: Estructura de la turbulencia sobre paredes rugosas (Structure of turbulence over rough walls)
FUNDING AGENCY: CICYT
DURATION: 2003 – 2006
PI: Javier Jiménez
AWARD AMOUNT: EUR 183,300.00

3. PROJECT TITLE: ACE-PCOR: Aeroacústica Computacional y Experimental para la Predicción y Control de Ruido. (Computational Aeroacoustics and Experimentation for Noise Prediction and Control)
FUNDING AGENCY: Ministerio de Educación y Ciencia, Spain
DURATION: 2008 – 2009
PI: Eusebio Valero
AWARD AMOUNT: EUR 364,675.00

2. PROJECT TITLE: Desarrollo de sistemas de control activo aerodinámico en bucle abierto para aviones subsónicos sin superficies móviles (Development of active aerodynamic open-loop flow control systems for subsonic aircraft without moving surfaces)
FUNDING AGENCY: CICYT, Spain
DURATION: 2006 – 2008
PI: Rafael Gómez Blanco
AWARD AMOUNT: EUR 115,000.00

1. PROJECT TITLE: Desarrollo de tecnologías de control activo de estelas de cuerpos romos cilíndricos (Development of active flow control technologies for bluff body wakes)
FUNDING AGENCY: CICYT, Spain
DURATION: 2002 – 2005
PI: Rafael Gómez-Blanco
AWARD AMOUNT: EUR 47,600.00

RESEARCH CONTRACTS OF SPECIFIC INDUSTRIAL INTEREST

6. CONTRACT TITLE: Instability of flow in bore cavities
FUNDING COMPANY: General Electric Global Research Center, Munich
DURATION: 2016 – 2016
PI: Vassilios Theofilis
CONTRACT AMOUNT: not disclosed

5. CONTRACT TITLE: Investigación de aerodinámica de fuselajes de helicópteros (Aerodynamics Research of Helicopter Fuselages)
FUNDING COMPANY: INDRA Sistemas S.A., Spain
DURATION: 2010 – 2010
PI: Vassilios Theofilis
CONTRACT AMOUNT: not disclosed

4. CONTRACT TITLE: Predicción de transición en perfiles de aerogeneradores HAWT (Transition Prediction on Horizontal Axis Wind Turbine Blades)
FUNDING COMPANY: GAMESA Eólica S.A., Spain
DURATION: 2008 – 2008
PI: Vassilios Theofilis
CONTRACT AMOUNT: not disclosed

3. CONTRACT TITLE: Separación de Cargas desde Aeronaves de Combate (Store Separation from Fighter Aircraft)
FUNDING COMPANY/AGENCY: Ejercito del Aire, Ministerio de Defensa de España (Spanish Air Force)
DURATION: 2005 – 2007
PI: Rafael Gómez Blanco (UPM)
CONTRACT AMOUNT: not disclosed

2. CONTRACT TITLE: ACE-PCOR: Aeroacústica Computacional y Experimental para Predicción y Control de Ruido (Computational and Experimental Aeroacoustics for Noise Prediction and Control)
FUNDING AGENCY: Ministerio de Educación y Ciencia, Spain
DURATION: 2005 – 2006
PI: Abel Abbas (Airbus ES)
CONTRACT AMOUNT: not disclosed

1. PROJECT TITLE: Control of Aerodynamic Flows for Environmentally Driven Aircraft
FUNDING COMPANY/AGENCY: Airbus ES
DURATION: 2004 – 2007
PI: Javier Jiménez
CONTRACT AMOUNT: not disclosed

SUPERCOMPUTING RESEARCH PROJECTS
As Principal Investigator – Public Competition – In last 10 years

9. PROJECT TITLE: Investigation of shock layer contribution to global instability of a three-dimensional isolated roughness element in a non-equilibrium hypersonic flow

FUNDING AGENCY: EPCCC

SUPERCOMPUTER: Archer2

CENTER: Archer, UK (www.archer2.ac.uk)

AMOUNT: 200,000 CUs

DURATION: 2022 – 2023

8. PROJECT TITLE: Study of Linear Instabilities in Laminar Supersonic Shock-wave/Boundary-Layer Interactions using Kinetic Methods

FUNDING AGENCY: Pathways

SUPERCOMPUTER: Frontera

CENTER: Texas Advanced Computing Center, USA (<https://frontera-portal.tacc.utexas.edu>)

AMOUNT: 12,600,000 CPU hrs

DURATION: 2022 – 2023

7. PROJECT TITLE: MERENAL – Mejoras Del Rendimiento Aerodinámico De Alas Mediante Control De Mecanismos De Inestabilidad Global

FUNDING AGENCY: Plan Nacional – Ministerio de Ciencia e Innovación, Spain

SUPERCOMPUTER: Magerit

CENTER: Centro de Supercomputación y Visualización de Madrid, UPM (www.cesvima.upm.es)

AMOUNT: 100,000 CPU hrs

DURATION: 2014

6. PROJECT TITLE: GL-STAB – Global STABility Analysis

FUNDING AGENCY: PRACE – Partnership for Advanced Computing in Europe

SUPERCOMPUTER: TGCC-CURIE

CENTER: GENCI, France (www-hpc.cea.fr/en/complexe/tgcc-curie.htm)

AMOUNT: 50,000 CPU hrs

DURATION: 2012

5. PROJECT TITLE: GATUS – Global instability Analysis of TURbulent Unsteady Separation

FUNDING AGENCY: DEISA – Distributed European Infrastructure for Supercomputing Applications

SUPERCOMPUTER: IBM Blue Gene/P

CENTER: Forschungszentrum Jülich, Germany (www.forschungszentrum-juelich.de)

AMOUNT: 2,000,000 CPU hrs

DURATION: 2008 – 2009

4. PROJECT TITLE: Global instabilities in laminar separation bubbles

FUNDING AGENCY: Ministerio de Ciencia e Innovación, ICTS, Spain

SUPERCOMPUTER: Finisterrae

CENTRO: Centro de Supercomputación de Galicia, Spain (www.cesga.es)

AMOUNT: 100,000 CPU hrs

DURATION: 2008 – 2009

3. PROJECT TITLE: Aeroacústica Computacional para la Predicción y Amortiguación de Ruido
FUNDING AGENCY: Universidad Politécnica de Madrid
PROJECT REFERENCE: A20404001
SUPERCOMPUTER: Magerit
CENTRO: Centro de Supercomputación y Visualización de Madrid (www.cesvima.upm.es)
AMOUNT: 50,000 CPU hrs
DURATION: 2007 – 2009

2. PROJECT TITLE: Global Instability and Control of Low Pressure Turbine Flows
FUNDING AGENCY: Ministerio de Ciencia e Innovación, Spain
SUPERCOMPUTER: SuperDome
CENTER: Centro de Supercomputación de Galicia, Spain (www.cesga.es)
AMOUNT: 50,000 CPU hrs
DURATION: 2006 – 2008

1. PROJECT TITLE: Far-Wake
FUNDING AGENCY: Ministerio de Ciencia e Innovación, Spain
SUPERCOMPUTER: Mare Nostrum
CENTER: Barcelona Supercomputing Center, Spain (www.bsc.es)
AMOUNT: 100,000 CPU hrs
DURATION: 2006 – 2008

As Collaborating Investigator

4. PROJECT TITLE: Simulation-assisted exploratory development of hypersonic flight phenomena

FUNDING AGENCY: US DoD

AMOUNT: 2 million CPU hours

PRINCIPAL INVESTIGATOR: Dr. Nicolas Bisek

SUPERCOMPUTER: Copper (Cray XE6)

CENTER: <http://centers.hpc.mil/systems/unclassified.html#Copper>

DURATION: 2017 – 2018

3. PROJECT TITLE: CFDSim

FUNDING AGENCY: US DoE

PRINCIPAL INVESTIGATOR: Dr. Elia Merzari and Dr. Aleksander Obabko

SUPERCOMPUTERS: Mira (IBM BG/Q)

CENTER: <https://www.alcf.anl.gov/mira>

DURATION: 2016 – 2017

2. PROJECT TITLE: Simulation-assisted exploratory development of hypersonic flight phenomena

FUNDING AGENCY: US DoD

AMOUNT: 1million CPU hours

PRINCIPAL INVESTIGATOR: Dr. Nicolas Bisek

SUPERCOMPUTER: Copper (Cray XE6)

CENTER: <http://centers.hpc.mil/systems/unclassified.html#Copper>

DURATION: 2016 – 2017

1. PROJECT TITLE: Simulation-assisted exploratory development of hypersonic flight phenomena

FUNDING AGENCY: US DoD, High Performance Computing Modernization Program

AMOUNT: 1million CPU hours

PRINCIPAL INVESTIGATOR: Dr. Jonathan Poggie

SUPERCOMPUTER: Cray XE6 – Copper

CENTER: Open Research Systems (www.ors.hpc.mil)

DURATION: 2014 – 2018

PUBLICATIONS
JCR Peer-Reviewed Journal Articles
(Own PhD students italicized)

-
- 89.** AUTHOR(S): Taira K, Amitay M, Theofilis V
TITLE: Massively separated flows over three-dimensional wings
JOURNAL: Annu. Rev. Fluid Mech.
Volume: Number:
Year: 2027 (invited, in preparation)
DOI:
-
- 88.** AUTHOR(S): Klothakis A, Theofilis V, Nikolos I
TITLE: Design and simulation of hypersonic waveriders in low density environments
JOURNAL: Progress in Aerospace Sciences
Volume: Number:
Year: 2026 (invited, in preparation)
DOI:
-
- 87.** AUTHOR(S): Davami J, Juliano TJ, Scholten A, Paredes P, Benitez EK, Running CL, Little N, Duan L, Dylewicz K, Pezlar V, Theofilis V, Thiele T, Willems S
TITLE: Separation and transition on the ROTEX-T cone-flare
JOURNAL: AIAA Journal
Volume: Number:
Year: 2025
DOI: [10.2514/1.J064190](https://doi.org/10.2514/1.J064190)
-
- 86.** AUTHOR(S): Dylewicz K, Freitas R, Paredes P, Alves L, Theofilis V
TITLE: On Shock Capturing Schemes for the Linear Stability Analysis of High-Speed Flows
JOURNAL: Proc. Royal Society London A
Volume: 481, Article ID: 20240504
Year: 2025
DOI: [10.1098/rspa.2024.0504](https://doi.org/10.1098/rspa.2024.0504)
-
- 85.** AUTHOR(S): Klothakis A, Nikolos IK, Theofilis V
TITLE: High-altitude kinetic theory simulation of a non-axisymmetric hypersonic vehicle
JOURNAL: AIP Conference Proceedings (to appear)
Volume: Number: Year: 2025
DOI:
-
- 84.** AUTHOR(S): Klothakis A, *Dylewicz K*, Theofilis V, Levin DA
TITLE: Computation of hypersonic flow around an isolated roughness element using kinetic methods
JOURNAL: AIP Conference Proceedings
Volume: 2996, Number: 080019, Year: 2024
DOI: [10.1063/5.0187703](https://doi.org/10.1063/5.0187703)
-
- 83.** AUTHOR(S): *Dylewicz K*, *Cerulus N*, Klothakis A, Theofilis V, Levin DA
TITLE: Linear stability of Couette flow with DSMC-informed boundary conditions
JOURNAL: AIP Conference Proceedings
Volume: 2996, Number: 150001, Year: 2024
DOI: [10.1063/5.0188611](https://doi.org/10.1063/5.0188611)
-

82. AUTHOR(S): Karpuzcu IT, Levin DA, Theofilis V

TITLE: On unsteadiness of hypersonic flow over a double cone

JOURNAL: AIP Conference Proceedings

Volume: 2996, Number: 080021, Year: 2024

DOI: 0.1063/5.0187396

81. AUTHOR(S): *Burtsev A, Pezlar V*, Theofilis V

TITLE: Sensitivity of flows over three-dimensional swept wings at low Reynolds numbers

JOURNAL: Journal of Fluid Mechanics

Volume: 997, A11, Year: 2024

DOI: 10.1017/jfm.2024.540

ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

80. AUTHOR(S): Ribeiro JHM, Neal J, *Burtsev A*, Amitay M, Theofilis V, Taira K

TITLE: Laminar post-stall wakes of tapered swept wings

JOURNAL: Journal of Fluid Mechanics

Volume: 976, A6, Year: 2023

DOI: 10.1017/jfm.2023.890

ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

79. AUTHOR(S): *Burtsev A*, He W, Zhang K, Theofilis V, Taira K, Amitay M

TITLE: Linear modal instabilities around post-stall swept finite wings at low Reynolds numbers

JOURNAL: Journal of Fluid Mechanics

Volume: 944, A6, Year: 2022

ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

78. AUTHOR(S): Sawant SS, Theofilis V, Levin DA

TITLE: On the synchronisation of three-dimensional shock layer and laminar separation bubble instabilities in hypersonic flow over a double wedge

JOURNAL: Journal of Fluid Mechanics

Volume: 941, Paper A7, Year: 2022

ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

77. AUTHOR(S): *Quintanilha H*, Paredes P, Hanifi A, Theofilis V

TITLE: Transient growth analysis of hypersonic flow over an elliptic cone

JOURNAL: Journal of Fluid Mechanics

Volume: 935, Paper A40, Year: 2022

ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

76. AUTHOR(S): Theofilis V, Pirozzoli S, Martin MP

TITLE: Special Issue on the Fluid Mechanics of Hypersonic Flight – Editorial

JOURNAL: Theoretical and Computational Fluid Dynamics

Volume: 36, Pages: 1-8, Year: 2022

DOI: 10.1007/s00162-022-00605-2

ISSN: 0935-4964, JCR CATEGORY: Mechanics, JOURNAL POSITION:

75. AUTHOR(S): Sawant SS, Levin DA, Theofilis V

TITLE: Analytical prediction of low-frequency fluctuations inside an one-dimensional shock

JOURNAL: Theoretical and Computational Fluid Dynamics

Volume: 36, Pages: 25-40, Year: 2022

DOI: 10.1007/s00162-021-00589-5

ISSN: 0935-4964, JCR CATEGORY: Mechanics, JOURNAL POSITION:

74. AUTHOR(S): *Klothakis A, Quintanilha H, Sawant S, Protopapadakis E, Theofilis V, Levin DA*
TITLE: Linear stability analysis of hypersonic boundary layers computed by a kinetic approach: a semi-infinite flat plate at $4.5 < M < 9$
JOURNAL: Theoretical and Computational Fluid Dynamics
Volume: 36, Pages: 117-139, Year: 2022
DOI: 10.1007/s00162-021-00601-y
ISSN: 0935-4964, JCR CATEGORY: Mechanics, JOURNAL POSITION:

73. AUTHOR(S): Sawant SS, Levin DA, Theofilis V
TITLE: A kinetic approach to studying low- frequency molecular fluctuations in a one-dimensional shock
JOURNAL: Physics of Fluids
Volume: 33, Paper 104106, Year: 2021
ISSN: 0001-1452, JCR CATEGORY: Physics of Fluids and Plasmas, JOURNAL POSITION: 10 O

72. AUTHOR(S): Zang K, Hayostek S, Amitay M, *Burtsev A*, Theofilis V, Taira K
TITLE: Laminar separated flows over finite-aspect-ratio swept wings
JOURNAL: Journal of Fluid Mechanics
Volume: 905, R1, Year: 2020
ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

71. AUTHOR(S): Karami S, Edgington-Mitchell D, Theofilis V, Soria J
TITLE: Characteristics of acoustic and hydrodynamic waves in under-expanded supersonic impinging jets
JOURNAL: Journal of Fluid Mechanics
Volume: 905, A34, Year: 2020
ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

70. AUTHOR(S): Zang K, Hayostek S, Amitay M, *He W*, Theofilis V, Taira K
TITLE: On the formation of three-dimensional separated flows over wings under tip effects
JOURNAL: Journal of Fluid Mechanics
Volume: 895, A9, Year: 2020
ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

69. AUTHOR(S): Karami S, Stegeman PC, Ooi A, Theofilis V, Soria J
TITLE: Receptivity characteristics of under-expanded supersonic impinging jets
JOURNAL: Journal of Fluid Mechanics
Volume: 889, Year: 2020
ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

68. AUTHOR(S): Müller JS, Lückoff F, *Paredes P*, Theofilis V, Oberleithner K
TITLE: Receptivity of the turbulent precessing vortex core: synchronization experiments and global adjoint linear stability analysis
JOURNAL: Journal of Fluid Mechanics
Volume: 888, Year: 2020
DOI: 10.1017/jfm.2019.1063
ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

67. AUTHOR(S): Tumuklu O, Levin DA, Theofilis V
TITLE: Kinetic modeling of unsteady hypersonic flows over a tick geometry
JOURNAL: Physics of Fluids
Volume: 31, Number: 5, Article: 056108, Year: 2019

66. AUTHOR(S): Tumuklu O, Levin DA, Theofilis V

TITLE: Modal analysis with proper orthogonal decomposition of hypersonic separated flows over a double wedge

JOURNAL: Physical Review Fluids

Volume: 4, Number: 4, Article: 033403, Year: 2019

ISSN:, JCR CATEGORY: Physics of Fluids and Plasmas, JOURNAL POSITION: 12 of 32

65. AUTHOR(S) : He W, Guan Y, Theofilis V, Li LKB

TITLE: Stability of Low-Reynolds-Number Separated Flow Around an Airfoil Near a Wavy Ground

JOURNAL: AIAA Journal

Volume: 57, Number: 1, Pages: 29-34, Year: 2018

ISSN: 0001-1452, JCR CATEGORY: Aerospace Engineering, JOURNAL POSITION: 5 OF 30

64. AUTHOR(S) : Tumuklu O, Theofilis V, Levin D

TITLE: On the unsteadiness of shock-laminar boundary layer interactions of hypersonic flows over a double cone (Featured Article)

JOURNAL: Physics of Fluids

Volume: 30, Number 10, Article: 106111, Year: 2018

ISSN: 0001-1452, JCR CATEGORY: Aerospace Engineering, JOURNAL POSITION: 5 OF 30

63. AUTHOR(S) : Tumuklu O, Levin D, Theofilis V

TITLE: Investigation of unsteady, hypersonic, laminar separated flows over a double cone geometry using a kinetic approach (Editor's Pick)

JOURNAL: Physics of Fluids

Volume: 30, Number: 4, Article: 046103, Year: 2018

ISSN: 0001-1452, JCR CATEGORY: Aerospace Engineering, JOURNAL POSITION: 5 OF 30

62. AUTHOR(S) : Taira K, Brunton SL, Dawson STM, Rowley CW, Colonius T, McKeon BJ, Schmidt OT, Gordeyev S, Theofilis V, Ukeily LS

TITLE: Modal analysis of fluid flows: an overview

JOURNAL: AIAA Journal, Volume: 51, Number 12, Pages: 4013 – 4041, Year: 2017

ISSN: 0001-1452, JCR CATEGORY: Aerospace Engineering, JOURNAL POSITION: 5 OF 30

61. AUTHOR(S) : Sharma A, Theofilis V, Colonius T

TITLE: Special issue on global flow instability and control

JOURNAL: Theoretical and Computational Fluid Dynamics

Volume: 31, Number 5-6, Pages: 471 – 474, Year: 2017

DOI: 10.1007/s00162-017-0444-y

ISSN: 0935-4964, JCR CATEGORY: Mechanics, JOURNAL POSITION:

60. AUTHOR(S) : Theofilis V

TITLE: The linearized Pressure Poisson Equation for global instability analysis of incompressible flows

JOURNAL: Theoretical and Computational Fluid Dynamics

Volume: 31, Number 5-6, Pages: 623 – 642, Year: 2017

DOI: 10.1007/s00162-017-0435-z

ISSN: 0935-4964, JCR CATEGORY: Mechanics, JOURNAL POSITION:

59. AUTHOR(S) : Perez JM, Aguilar A, Theofilis V

TITLE: Lattice Boltzmann methods for global linear instability analysis

JOURNAL: Theoretical and Computational Fluid Dynamics
Volume: 31, Number 5-6, Pages: 643 – 664, Year: 2017
DOI: 10.1007/s00162-016-0416-7
ISSN: 0935-4964, JCR CATEGORY: Mechanics, JOURNAL POSITION:

58. AUTHOR(S) : *He W, Tendero JA, Paredes P, Theofilis V*
TITLE: Linear instability in the wake of an elliptic wing
JOURNAL: Theoretical and Computational Fluid Dynamics
Volume: 31, Number 5-6, Pages: 483 – 504, Year: 2017
DOI: 10.1007/s00162-016-0400-2
ISSN: 0935-4964, JCR CATEGORY: Mechanics, JOURNAL POSITION:

57. AUTHOR(S) : *He W, Gioria R, Perez JM, Theofilis V*
TITLE: Linear instability of low Reynolds number massively separated flow around three NACA airfoils
JOURNAL: Journal of Fluid Mechanics
Volume:811, Pages: 701 – 741, Year: 2017
DOI: 10.1017/jfm.2016.778
ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

56. AUTHOR(S) : *Le Clainche S, Rodríguez D, Theofilis V, Soria J.*
TITLE: Formation of three-dimensional structures in the hemisphere cylinder
JOURNAL: AIAA Journal
Volume:54, Issue: 12, Pages: 3884-3894 , Year: 2016
DOI: 10.2514/1.J055011
ISSN: 0001-1452, JCR CATEGORY: Aerospace Engineering, JOURNAL POSITION: 5 OF 30

55. AUTHOR(S) : *Paredes P, Gosse R, Theofilis V, Kimmel R*
TITLE: Linear modal instabilities of hypersonic flow open an elliptic cone
JOURNAL: Journal of Fluid Mechanics
Volume:804, Pages: 442-466 , Year: 2016
DOI: 10.1017/jfm.2016.536
ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

54. AUTHOR(S) : *Liu Q, Gómez F, Theofilis V*
TITLE: Linear instability analysis of low-Re incompressible flow over a long rectangular finite-span open cavity
JOURNAL: Journal of Fluid Mechanics
Volume:799, Paper: R2 , Year: 2016
DOI: 10.1017/jfm.2016.391
ISSN: 0022-1120, JCR CATEGORY: Mechanics, JOURNAL POSITION: 10 OF 133

53. AUTHOR(S) : *Liu Q, Gómez F, Pérez JM, Theofilis V*
TITLE: Instability and sensitivity analysis of flows using OpenFOAM (Open Access)
JOURNAL: Chinese Journal of Aeronautics
Volume: 29 (2), Pages: 316-325, Year: 2016
DOI: <http://dx.doi.org/10.1016/j.cja.2016.02.012>
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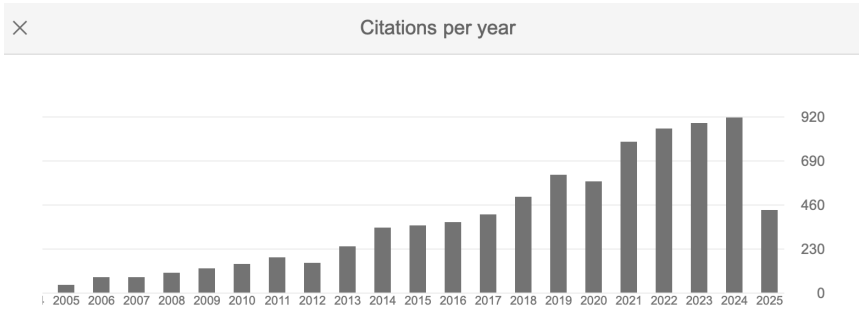
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DOI: 10.1007/978-3-319-06260-0_34
Volume: 107, **Pages:** 229 – 234, **Year:** 2015 **PUBLISHER:** Springer
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TITLE: Prologue to the International Conference on Massively Separated Flows and Their Control
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BOOK TITLE: Progress in Industrial Mathematics at ECMI 2006
BOOK SERIES: MATHEMATICS IN INDUSTRY
EDITOR(S): Bonilla, LL; Moscoso, M; Platero, G; Vega, JM
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TITLE: Spectral element analysis of vortical flows
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EDITOR(S): Govindarajan, R.
Volume: 78, Pages: 153 – 158, Year: 2006

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TITLE: Global linear stability theory in aerospace applications (*2018 Ludwig Prandtl Memorial Lecture*)
CONFERENCE: 89th Annual Meeting GAMM, 19 – 23 March 2018
VENUE: Munich, Germany **YEAR:** 2018
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- 13. AUTHOR:** Theofilis V
TITLE: Global linear stability
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TITLE: An overview of global stability analysis
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VENUE: Denver, Colorado, USA **YEAR:** 2017
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TITLE: Flow and flow instability around complex geometries at supersonic and hypersonic speeds
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CONFERENCE: 58th Israel Annual Conference on Aerospace Sciences, 14 – 15 March 2018
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DOI: [10.2514/6.2017-4510](https://doi.org/10.2514/6.2017-4510)
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PUBLICATION: AIAA Paper 2014-0075 eISBN: 978-1-62410-256-1
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ISBN: 978-163266265-1
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TITLE: Spatial linear global instability analysis of the HIFiRE-5 elliptic cone model flow
CONFERENCE: 43rd AIAA Fluid Dynamics Conference, 24 – 27 June 2013
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PUBLICATION: AIAA Paper 2013-2880
VENUE: San Diego, CA, USA
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TITLE: On global linear instability analysis of hypersonic flow around a model re-entry vehicle
CONFERENCE: 43rd AIAA Fluid Dynamics Conference, 24 – 27 June 2013
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TITLE: A unified framework for global instability mechanisms in the plane channel, diverging channel and backward-facing step flow
CONFERENCE: 43rd AIAA Fluid Dynamics Conference, 24 – 27 June 2013
DOI: 10.2514/6.2013-2463
PUBLICATION: AIAA Paper 2013-2463
VENUE: San Diego, CA, USA
YEAR: 2013

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TITLE: Stability analysis of the flow around a cylinder fitted with helical strakes
CONFERENCE: 43rd AIAA Fluid Dynamics Conference, 24 – 27 June 2013
DOI: 10.2514/6.2013-2987
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YEAR: 2013

33. AUTHOR(S): Le Clainche S, Gómez F, Li I, Soria J, Theofilis V
TITLE: Structural analysis on a hemisphere-cylinder at moderate Reynolds number and high angle of attack
CONFERENCE: 51st AIAA Aerospace Sciences Meeting, 7 - 10 January 2013
DOI: 10.2514/6.2013-387
PUBLICATION: AIAA Paper 2013-0387 ISBN: 978-1-60086-933-4
VENUE: Grapevine (Dallas/Ft. Worth Region), TX, USA YEAR:
2013

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TITLE: Accurate Parabolic Navier-Stokes solutions of the supersonic flow around an elliptic cone
CONFERENCE: 51st AIAA Aerospace Sciences Meeting, 7 - 10 January 2013
DOI:10.2514/6.2013-670
PUBLICATION: AIAA Paper 2013-0670 ISBN: 978-1-60086-933-4
VENUE: Grapevine (Dallas/Ft. Worth Region), TX, USA YEAR:
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TITLE: Acoustic resonances in a 3D open cavity: Comparison of experimental and numerical results
CONFERENCE: InterNoise, August 19-22, 2012
PUBLICATION:
VENUE: New York, USA
YEAR: 2012

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CONFERENCE: 42nd AIAA Fluid Dynamics Conference and Exhibit, June 25-28, 2012
PUBLICATION: AIAA 2012-3273
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CONFERENCE: 42nd AIAA Fluid Dynamics Conference and Exhibit, June 25-28, 2012
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TITLE: Time-resolved Particle Image Velocimetry and structural analysis on an hemisphere-cylinder at low Reynolds numbers and large angle of incidence
CONFERENCE: 42nd AIAA Fluid Dynamics Conference and Exhibit, June 25-28, 2012
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VENUE: New Orleans, Louisiana, USA
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PUBLICATION: AIAA 2012-3346
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- 24.** AUTHOR(S): Pérez, J.M., Rodríguez, D., Theofilis, V.
TITLE: Linear global instability of non-orthogonal incompressible swept attachment-line boundary layer flow
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CONFERENCE: 47th AIAA Aerospace Sciences Meeting, Orlando, Florida, Jan. 5-8, 2009
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CONFERENCE: 36th AIAA Fluid Dynamics Conference and Exhibit, June 5-8, 2006
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PUBLICATION: AIAA- 2004-2544
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TITLE: On Unstable 2D Basic States in Low Pressure Turbine Flows at Moderate Reynolds Numbers
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VENUE: Orlando, FL
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TITLE: Flow and Flow Instability Inside a Microcavity
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PUBLICATION: AIAA- 2002-2987
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6 – 8 December 2022

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PUBLICATION: Lecture Series Proceedings, Von Karman Institute

ISBN: to be assigned

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TITLE: Global linear instability – Applications

CONFERENCE: Progress in Flow Instability Analysis and Laminar-Turbulent Transition
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BOOK TITLE: 6th International Conference on Education and New Learning Technologies

VENUE: Barcelona, Spain, July 7 – 9, 2014

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DOCUMENT REFERENCE: Internal Report DLR IB 223-97 A 44, Göttingen, Germany **Year:** 1997

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