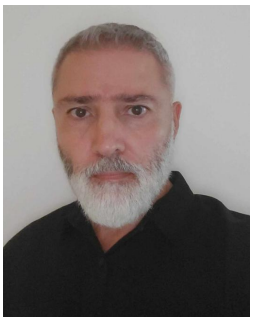
Curriculum Vitae

Lakhdar Remaki, PhD

Associate Professor
Department Chair
Department of Mathematics and Computer Science, Alfaisal University
Member of BCAM- Basque Center for Applied Mathematics, Spain
Adjunct professor, Laval University, Quebec, Canada



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7985 rue du Rhône,
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Quebec Canada

Citizenship: Canadian
Languages; English, French, Arabic, Amazigh (Kabyle)

Research Interests

- Computational Fluid Dynamic (CFD)
  - Gas-Particles modeling
  - Oil motion simulation in porous media
  - Mesh Adaptation
  - Delaunay Mesh Generation
  - Aeroacoustics and Turbomachinery
- Partial Differential Equations (PDEs) and Numerical Analysis:
  - PDEs analysis: Existence and uniqueness of solutions, regularity,…
  - Numerical methods
    - Adomian based Numerical schemes
    - Finite Difference Methods for hyperbolic quasi-linear equations
    - Finite Element Methods
    - Discontinuous Galerkin Method
    - Finite volume method
- Data Science
  - Machine learning: SVM and Neural Networks

    - Image Processing
        - Shock filters for signal and image enhancement and restoration
        - Multi-scale based approach for signal and image analysis
        - Breast Cancer detection
    - Statistical and Chaotic Models for Information Retrieval from Text Corpus
    - Biomedical Applications
        - Brain structural connectivity and functional connectivity correlation analysis
        - 3D stereoscopic images reconstruction for scoliosis braces and surgery techniques improvements
- Homogenization of heterogeneous media

Education

- **PhD in Applied Mathematics (**1997**)**
  Claude Bernard University, Lyon, France.
  Title: Theoretical and numerical study of quasi-linear hyperbolic equations with discontinuous coefficients, and 2D linear acoustic.
- **Masters in Applied Mathematics (**1992**)**
  Claude Bernard University, Lyon, France.
  Title: Axes and orientation effects in biphasic motion simulation in a porous media.
- **B.Sc. in Mathematics (**1991**)**
  USTHB University, Algiers, Algeria.
  Specialization: Partial differential equations

Training

- Management skills: BCAM, Feb 2013
- Star CCM+: CTA training, May 2011
- Parallel computing MPI: CLUMEQ training, August 2003.
- Object oriented concepts: CRIM training, January1999.

Computer Skills

- **Languages**: FORTRAN, C, C++, MATLAB
- **Software**: Star CCM+, ANSYS, ICEMCFD, SALOME, PARAVIEW,...
- **Tools**: Tex, Latex, MS Office.
- **Teaching technologies**: Moodle, Smartboard, ExamSoft(computer assessment system)

Leadership

- **Mathematics Department chair**: Alfaisal University-2017-
- **CFD Research group leader:** BCAM-Basque center for applied mathematics, Spain-2012-2015
- **Severo Ochoa Guarantor (distinction):** BCAM-Basque center for applied mathematics, Spain-2013-2015
- **Responsible for the industrial Bombardier chair** for mesh adaptation development: Canada-2001-2007

Membership and Affiliations

- ASME, ECMI
- External Member of BCAM- Basque Center for Applied Mathematics, Spain (2016-2020)
- Adjunct professor, Laval University, Quebec, Canada (2013-2019)

Honors, Awards and Distinctions

- **Service Award**, 2024, Alfaisal University
- **Teaching Award**, 2021, Alfaisal University
- **Erasmus Mundus Scholar Scholarship** for teaching in the REM (renewable energy master), 2019
- **Severo Ochoa Guarantor (distinction):** BCAM-Basque center for applied mathematics, Spain, 2013-2015
- **BCAM-External Member** (2016-2020)
- **Adjunct professor**, Laval University, Quebec, Canada (2013-2019)
- **Agregation mathematiques, France,** (1994-Passed the written test, oral test not taken)
- **Huston University scholarship for PhD in numerical analysis** (1991 – declined)
- **Al Hariri scholarship for best Arab students** (1991)
- **Postgraduate scholarship** (1992), USTHB, Algeria

Employment History

- 2016- **Associate professor (Head of Department 2017-)**
  Alfaisal University (American-model University. Instruction medium: English), Riyadh 11533, Saudi Arabia
  BCAM-External Member
  BCAM: Basque center for applied mathematics, Spain
  Adjunct professor
  Laval University, Quebec, Canada

- 2012-2016 **Research professor,**
  CFD group leader,

BCAM: Basque center for applied mathematics, Spain
Main duties: Research, Advising, Industrial Projects Development, Teaching, Administration
Adjunct professor
Laval University, Quebec, Canada

- 2011- 2012 **Researcher**
  CTA: Center of Advanced Technologies BRP (Bombardier) – Sherbrooke University (www.cta-brp-udes.com), Canada
  Main duties: Research, Industrial Projects Development

- 2007- 2011 **Research officer**
  Civil and Computational Engineering Center,
  School of Engineering. Swansea University, UK
  Main duties: Research, Teaching, Industrial Projects Development
  Academic Teacher (2010)
  International College Wales Swansea (ICWS), UK
  Main duties: Teaching

- 2001- 2007 **Research associate**
  McGill University, Canada
  NSERC-J. Armand Bombardier Industrial Research Chair.
  Main duties: Research, Industrial Projects Development

- 98- 2001 **Postdoctoral Fellow**
  - ✓ School of Engineering (E.T.S) at Montreal
    Laboratory for Imagery, Vision and Artificial Intelligence (LIVIA)
  - ✓ LIS3D Laboratory, Polytechnic School of Montreal, Sainte-Justine Hospital
  - ✓ Lady Davis Institute (LDI)
  - ✓ Université du Québec à Montreal (UQAM)
    Information Cognitive Analysis Laboratory (LANCI)

- Jan 97 -Dec 97 **Research Assistant**
  Université du Québec à Montreal (UQAM), Canada
  Information Cognitive Analysis Laboratory (LANCI), Canada

- 92 –94 **Research Assistant**
  Claude Bernard University, Lyon, France
  Applied Mathematics Laboratory of Lyon (MAPLY)

Teaching

Some achievements

- ABET accreditation for life science and engineering programs (granted): Member of the preparation committee.
- Partner for Saudi Economists Program.
- Programs proposals (waiting approvals): Minor in applied mathematics, Minor in data and numerical simulations.
- Design of many math courses.
- Erasmus Mundus Scholar Scholarship for teaching in the REM (renewable energy master), 2019

Technologies

- Moodle, Smartboard, ExamSoft (computer assessment system)
- Online teaching: Zoom, BBB

Examples of taught courses

Graduate:

- CFD course, REM program, UPV, Spain (Erasmus teaching scholarship)
- Hyperbolic Equations, IMUS, Seville University-BCAM, Spain
- CFD course at Hitit University, Turkey

Undergraduate:

- MAT213 Differential Equations, AU
- ME435 Undergraduate Research (CFD), AU
- MAT224 Numerical Methods, AU
- MAT211 Linear Algerbra, AU
- MAT105, MAT112 Calculus I, II, AU
- B099 Mathematics for finance. International College Wales Swansea (ICWS), UK
- EG189 Engineering Analysis I. Swansea University, UK
- EG190 Engineering Analysis II. Swansea University, UK

Grants

- IRG grant (**PI**), Alfaisal University, 2020-2022 (6000 dollars)
- IRG grant (**PI**), Alfaisal University, 2016-2018 (6000 dollars)
- CDTI grant (**Local PI**), 2015-2017 (80,000 Euros)
- Spanish Ministry of Economy and Competitiveness with reference MTM2013-40824 (**Partner**), 2014-2017 (47,955 Euros).
- Severo Ochoa Excellence grant (G**roup grant**), 2014-2018 (4M Euros)
- Plan de Ayudas a Proyectos de Investigación en Centros de Excelencia 2012 grant (**PI**), 2012-2014 (235K Euros)
- Leonard Da Vinci Project Grant (**Local PI**), 2012-2014 (300K Euros)
- BERC Grant (G**roup grant**) 2013-2014 (1.3M Euros)
- FQNRT Grant (**Partner**), 2012-2015 (120K Canadian Dollars)

Under review:

- RDIA (TDG), Virtual Porous Media Simulation (VPMS) and its Application in Energy and Seawater Desalination sectors.

Advising

Master

- Imanol Garcia (Master 2012), Thesis title “Aerodynamic Analysis of Axial Fan

Unsteady Simulations"

PhD
Main adviser

- Imanol Garcia (Thesis defended on 09/03/2018), Thesis title "On Adomian Based Numerical Schemes for Euler and Navier-Stokes equations, and Application to Aeroacoustics Propagation"
- Inigo Bidaguren (Part time, defended on 27/05/ 2019), Thesis title "POD and Genetic Algorithms for Turbo-machinery Design" expected date of defense: March 2019

Co-adviser

- Reda Mekhlouf (PhD Defended on 20/04/2018), Thesis title "Numerical Simulation of for TwoFluid interfacial flows"
- Alptug Yataganbaba (PhD candidate 2014- moved to industrial sector), Thesis title "drying kinetics of tile-brick, dryer optimization".

Postdoctoral

- Goran Stipcich - Postdoctoral fellow (2012-2016), Project: High order methods and turbulent models for *BBiped*, a BCAM-BALTOGAR CFD platform.
- Carmen Alonso - Postdoctoral fellow (2013-2016), Project: Graphical user interface development and HPC for *BBiped*.
- Ali Ramezani - Postdoctoral fellow (2013-2016), Project: Multi-zone approach for rotating blades effect and turbulence for *BBiped*.

Collaborators

Academic

Prof. J.M Blanco: UPV University, Basque country, Spain
Prof. Enrique Zuazua, UAM, DeustoTech Research Center, Spain
Prof. D. Pardo, UPV/EHU, Spain
Dr. F. Taghaddousi, University of Kentucky , USA
Prof. Halil Aykul, Hitit University, Turkey
Prof. S. Moreau: Sherbrooke University, QC, Canada
Prof. David Lannes, Bordeaux University, France
Dr. B. Evans, College of Engineering, Swansea University, UK
Prof. O. Hassan, College of Swansee University, UK
Dr M Hakki Eres, School of Engineering Sciences Southampton University, UK
Pr. Markus Bause Helmut Schmidt University University of the Federal Armed Forces Hamburg Faculty of Mechanical Engineering, Germany

Industrial

ETXE-TAR (Spain), BLATOGAR (Spain), OCEANTEC (Spain), Bombardier (Canada)

Projects

Projects with Industrial partners:

- **FRACTAL**: Laser-feeder coating system design and optimization. Funded by CDTI grant, 2015-2017- **Partner**: ETXE-TAR (Spanish company)

- **BCAM-BALTOGAR CFD** Platform for Simulation and Design of Turbo-machinery. Funded by Plan de Ayudas a Proyectos de Investigación en Centros de Excelencia 2012 (programa financiado por el Departamento de Promoción Económica de la diputación Foral de Bizkaia). **Partner**: BLATOGAR (Spanish company)

- **Knowledge Transfer of Numerical Analysis and 3D Simulation Technologies** Applied on Engineering Research. Funded by European Leonard Da Vinci Project, 2012-2014. **Partners**: ANOVA (Turkish company), Hitit University, Southampton university, Lund University
- **APC project:** Aerodynamic optimization .and heat management for a new generation of BRP hybrid recreational vehicle (Spyder). Funded by NSERC (Canada) and Bombardier. **Partner**: BRP-Bombardier (Canadian company)
- **Supersonic Bloodhound Vehicle project**: In charge of solver stability and accuracy improvement for supersonic speeds and Spray-Drag modeling (Ended January 2011). Funded by EPSRC(UK) (http://www.bloodhoundssc.com)
- **Surface Mesh generation using local mesh transformations**: Project with the European Aeronautic Defense and Space Company EADS (Ended May 2010)
- **Aero-Numerics project**: Responsible for the industrial Bombardier chair of the mesh adaptation development (Ended September 2007). Funded by NSERC (Canada) and Bombardier
- **3DSpine project**: 3D stereoscopic images reconstruction. Funded by Sainte-Justine Hospital (Montreal) and BIORTHEX Inc. (http://www.biorthex.com)

Academic projects:

- CAD free porous media simulation: Application to oil extraction and desalination techniques improvement
- Virtual and dual-mesh finite volume for flow simulation in porous media. Funded by IRG grant, Alfaisal University
- Brest Cancer Project: Using Differential and Homology techniques on digitalized images for early breast cancer detection.

Main Contributions to research

- **Computational Fluid Dynamic (CFD) and Numerical Methods:**
  - *Adomian based Numerical schemes for Navier-Stokes equations*
  - *Dual mesh finite volume immersed domain approach for rigid body movement*
  - *Virtual Multiple Rotating Frame technique for Turbomachines simulation*
  - *New limiter design for high order finite volume methods using HLLC Riemann solver applied to high speed flows simulation.*
  - *New method for gradient reconstruction.*
  - *New Riemann solver for scalar hyperbolic equations*
  - *Spray Drag simulation for bloodhound supersonic car in fluidised desert.*
  - *Proposition of a new artificial viscosity for a 3D Euler and Navier-Stokes equations and its implementation in a finite element code FENSAP.*
- **Mesh generation and Adaptivity*:***
  - *New techniques for anisotropic Delaunay mesh generation and application to CFD*

- *Improvement of mesh adaptation performance in the case of weak and multiple shocks.*
- *A new functional mesh adaptation method based on Hermite interpolation to better predict Drag and lift coefficients*
- *Development of an acoustic-inspired approach and a fast Euler solver to design an optimal initial grid for Navier-Stokes equations.*

- **Partial Differential Equations (PDEs) and Numerical Analysis:**
  - *Riemann solution for hyperbolic equations with discontinuous coefficients*
  - *Proof of Existence and uniqueness of a generalized solution for quasi-linear hyperbolic equations with discontinuous coefficients.*
  - *Proposition of a new numerical scheme of Godunov type and analysis of its stability and convergence. Numerical study of 2D acoustical wave's propagation in a heterogeneous media (liquid-solid)*
- **Machine Learning and Data Analysis:**
  - Kerel-based optimal subspaces (KOS) method for data clustering.
  - *3D images reconstruction/camera calibration (e.g. Development of a nonlinear optimization method to reconstruct 3D scoliotic spines).*
  - *Shock filters for signal and image enhancement and restoration (e.g. Proposition of a 1-D and 2-D (images) shock filter models (hyperbolic quasi–linear equations) for signals enhancement and restoration).*
  - *Multi-scale based approach for signal and image analysis (e.g. Introduction of a new family of kernels with a compact support in a multi-scale analysis of 2D signals).*
  - *Biomedical Applications (e.g. Mathematical modeling of the micro-array genetic expression)*
  - *Development of an HMM model to extract complex words from a textual corpus.*
  - *Proposition of a chaotic model to the automatic categorizing and summarizing of a textual corpus.*
  - *Application of Markovian based model in information retrieval from textual corpus using N-Grams decomposition method.*
- **Homogenization of heterogeneous media:**
  - *Homogenization of a hyperbolic model and its numerical approximation.*

Committees and Services

Current:

- Member of Life science program council (AU)
- Member of Math department council (AU)
- Member of math curriculum committee (AU)
- Chair of Quality Assurance and Accreditation Committee of Math department (AU)
- Chair of Research and Promotion Committee of Math department (AU)
- Undergraduate thesis defense (Jury member)
- Master thesis defense (chair)

Past:

- International Workshop organizer on "Mathematics and its Applications", BCAM 27-29 May, 2015
- Special session organizer on Immersing Approaches in Computational Fluid Dynamics for the Applied Mathematics, Modeling and Computational Science

(AMMCS 2015) conference, Waterloo, Ontario, Canada, June 07-12, 2015

- Doctoral course coordinator, IMUS, Seville University-BCAM 2015
- Committee member for PhD student selection (BCAM 2014)
- BCAM-BALTGAR workshop organizer on Turbomachinery and Aerodynamic Shape Optimization, March 28, 2014
- Mini-symposium organizer on Gas-Particles Modeling and Simulation for the WCCM-ECCM-ECFD 2014 conference, Barcelona, Spain
- Committee member for Post-docs selection (BCAM,NUMERIWAVES, 2013)
- Special session organizer on CFD for the Applied Mathematics, Modeling and Computational Science (AMMCS 2013) conference, Waterloo, Ontario, Canada, August 26-30, 2013
- Scientific member of BCAM Workshop on Computational Mathematics, BCAM, Spain, October 02-2012
- Session co-organizer on Finite element methods for convection-diffusion problems for the international congress on numerical methods (CMN2013), June 25-28, 2013, Bilbao, Spain
- Co-Organizer of the Tetrahedron Workshop III: The Third International Workshop on Grid
  Generation for Numerical Computations, September 14–15, 2010, Swansea University, UK
- **Reviewer for the following journals**
  - ✓ Journal of Aircraft
  - ✓ Communications in Numerical Methods in Engineering (CNM)
  - ✓ International Journal for Numerical Methods in Fluids (IJNMF)
  - ✓ International Journal of Computational Fluid Dynamics (IJCFD)
  - ✓ Journal of Engineering Systems Modeling and Simulation (IJESMS).
  - ✓ Other…

Publications: 6 most important

1. Garcia-Beristain, and **L.Remaki**, 'Time-adaptive Adomian decomposition-based numerical scheme for Euler equations', Numer. Methods Partial Differ. Eq. (2022), 1–27. https://doi.org/10.1002/num.22881
2. **L. Remaki**, A. Ramezani, J.M. Blanco, I. Garcia, "New Simplified Algorithm for the Multiple Rotating Frame Approach in CFD" *Journal of Fluids Engineering* vol, 139 (8), pp: 081-104, 2017
3. **L.Remaki** and W.G. Habashi "3-D Mesh Adaptation on Multiple Weak Discontinuities and Boundary Layers," *SIAM J. Sci. Comupt. Vol. 28, No. 4, pp. 1379–1397 2006.*
4. **L. Remaki**, H. Beaugendre and W.G. Habashi "ISOD - An Anisotropic IsovaluesOriented Diffusion Artificial Viscosity. Formulation and Application to Euler and
   Navier-Stokes Equations," *Journal of Computational Physics. Vol.186, No 1, pp. 279-294 2003.*
5. **L. Remaki** and M. Cheriet, "Numerical Scheme of Shock Filter Models for Image Enhancement and Restoration," *Journal of Mathematical Imaging and Vision Vol 18: p. 129–143, 2003.*
6. **L. Remaki** and M. Cheriet, "Enhanced and Restored Signal as a Generalized Solution for Shock Filter Models: Part-I: Existence and Uniqueness result of the

Cauchy Problem," *Journal of Mathematical Analysis And Applications. Vol. 279, No 1, pp. 207-227, 200*

Publications: Complete list

Journals

1. **L. Remaki**, "KOS: Kernel-based Optimal Subspaces Method for Data Classification - A Fast and Efficient Alternative to SVM', submitted to *Pattern Recognition journal.*
2. I. Bidaguren **L. Remaki** , J.M. Blanco, "Proper Orthogonal Decomposition Technique: New Advances and Application to Solve PDEs and inviscid flows", under revision, Journal of Aerospace Engineering. *Accepted*.
3. Wakil Sarfaraz, Gulsemay Yigit, Raquel Barreira, **Lakhdar Remaki**, Muflih Alhazmi, Anotida Madzvamuse," Understanding the dual effects of linear cross-diffusion and geometry on reaction–diffusion systems for pattern formation", Chaos, Solitons & Fractals, v(186),115-295,https://doi.org/10.1016/j.chaos.2024.115295. (2024)
4. **L. Remaki**. Riemann Solver for Hyperbolic Equations with Discontinuous Coefficients: A Mathematical Proof of the Constant State Formula. *European Journal of Applied Sciences*, *12*(1), 1–16. https://doi.org/10.14738/aivp.121.16175. (2024)
5. I. Garcia and **L. Remaki**, "Time-Adaptive Adomian Decomposition Based Numerical Scheme for Euler Equations" Numer. Methods Partial Differ. Eq. (2022), 1–27. https://doi.org/10.1002/num.22881
6. **L. Remaki** , "Waves Speed Averaging Impact on Godunov type Schemes for Hyperbolic Equations with Discontinuous Coefficients''. *European Journal of Applied Sciences*, *10*(1), 333–347. https://doi.org/10.14738/aivp.101.11414
7. R. Mekhlouf, A. Baggag, **L. Remaki**, "Assessment of Nitsche's method for Dirichlet boundary conditions treatment," *Journal of Fluid Flow, Heat and Mass Transfer (JFFHMT),* vol. 4, pp. 54-63, 2017. DOI:10.11159/jffhmt.2017.007
8. **L. Remaki**, "Waves Speed Averaging Impact on Godunov type Schemes for Hyperbolic Equations with Discontinuous Coefficients: The linear scalar case" preprint arXiv:1711.03246, 2017
9. **L. Remaki**, A. Ramezani, J.M. Blanco, I. Garcia, "New Simplified Algorithm for the Multiple Rotating Frame Approach in CFD" *Journal of Fluids Engineering* vol, 139 (8), pp: 081-104, 2017
7. Javier Rasero, Carmen Alonso-Montes, Ibai Diez, Laiene Olabarrieta-Landa, **Lakhdar Remaki**, Iñaki Escudero, Beatriz Mateos, Paolo Bonifazi, Manuel Fernandez, Juan Carlos Arango-Lasprilla, Sebastiano Stramaglia, Jesus M Cortes, 'Group-Level Progressive Alterations in Brain Connectivity Patterns Revealed by Diffusion-Tensor Brain Networks across Severity Stages in Alzheimer's Disease', Frontiers in aging neuroscience vol,9, p. 215, 2017

8. J.M. Blanco, **L. Remaki** and F. Peña, "New investigation on global efficiency in thermal power plants, addressing the environmental impact of burning alternative fuels through CFD", Accepted in International Journal of Energy and Environment, 2015
9. Carmen Alonso Montes , Ibai Diez, **Lakhdar Remaki**, Iñaki Escudero, Beatriz Mateos, Yves Rosseel, Daniele Marinazzo, Sebastiano Stramaglia, Jesus M Cortes, "Lagged and instantaneous dynamical influences related to brain structural

connectivity, Frontiers in Psychology, section Quantitative Psychology and Measurement, volume 6, 2015, doi:10.3389/fpsyg.2015.01024

10. **L. Remaki**, O. Hassan B. Evens and K. Morgan, "Sand Particles Effect on a Supersonic Vehicle Performance," *JCSMD,* Volume 2, Number 3, October 2014, pp. 169-177(9)

11. **L. Remaki**, "Riemann solution for hyperbolic equations with discontinuous coefficients, " International Conference: Application of Mathematics 2013, Institute of Mathematics, Academy of Sciences, Žitná 25, Prague, Czech Republic, May 15–17, 2013

12. T. Drian, **L. Remaki**, H. Fellouah, S. Moreau, A. Desrocher, "Aerodynamic Study of a Tricycle Wheel Sub-System for Drag Reduction*", Journal of Fluids Eng. volume 136, issue 1, 014502 Nov 06, 2013. doi:10.1115/1.4025644*

13. T. Drian, H. Fellouah, S. Moreau, A. Desrocher, **L. Remaki**, "Numerical Simulations and Wind Tunnel Measurements on a Tricycle Wheel sub-System Wheel*",* Int. J. Engineering Systems Modelling and Simulation, vol. 5, Nos. 1/2/3, 2013 pp.159-169

14. **L. Remaki**, O. Hassan, K. Morgan, "Aerodynamic Computations Using a Finite Volume Method with an HLLC Numerical Flux Function,*" Journal of Mathematical Modeling of Natural Phenomena, Vol.* 6, No. 3, 2011, pp.189-212 DOI: 10.1051/mmnp/20116308

15. B.J. Evans, J.W. Jones, K. Morgan, O. Hassan, **L. Remaki** "Computational Fluid Dynamics Applied to the Aerodynamic Design of a Land-Bases Supersonic Vehicle", *Journal of Partial Differential Equation, volume 27, issue 1, pages. 141-159, January 2010. DOI 10.1002/num.20644*

16. **L.Remaki** and W.G. Habashi "Hermite-Based Mesh Adaptation for Functional Outputs Improvement in Fluid Flow Simulation*," AIAA Journal, Vol. 47, No .8, pp. 1965-1976, 2009. DOI: 10.2514/1.33437*

17. **L.Remaki** and W.G. Habashi "A Posteriori Error Estimate Improvement in Mesh Adaptation for CFD Applications," *Proc. IMechE, Part C: J. Mechanical Engineering Science*, 2009, 223(C5), 1117-1126 DOI: 10. 1243/09544062JMES1165.

18. **L.Remaki** and W.G. Habashi "3-D Mesh Adaptation on Multiple Weak Discontinuities and Boundary Layers," *SIAM J. Sci. Comupt. Vol. 28, No. 4, pp. 1379–1397 2006.*

19. **L. Remaki** and W.G. Habashi, "Automatic mesh adaptation as an efficient tool to improve CFD accuracy," International Journal of Computational Fluid Dynamic, Vol. 19, No. 8, November 2005, 571-580.

20. **L. Remaki**, H. Beaugendre and W.G. Habashi "ISOD - An Anisotropic Isovalues-Oriented Diffusion Artificial Viscosity. Formulation and Application to Euler and Navier-Stokes Equations," *Journal of Computational Physics. Vol.186, No 1, pp. 279-294 2003.*

21. **L. Remaki** and M. Cheriet, "Numerical Scheme of Shock Filter Models for Image Enhancement and Restoration," *Journal of Mathematical Imaging and Vision Vol 18: p. 129–143, 2003.*

22. **L. Remaki** and M. Cheriet, “Enhanced and Restored Signal as a Generalized Solution for Shock Filter Models: Part-I: Existence and Uniqueness result of the Cauchy Problem,” *Journal of Mathematical Analysis And Applications. Vol. 279, No 1, pp. 207-227, 2003.*

23. **L. Remaki** and M. Cheriet, “Enhanced and Restored Signal as a Generalized Solution for Shock Filter Models: Part-II: Numerical Study,” *Journal of Mathematical Analysis And Applications. Vol. 279, No 2, pp. 398-418, 2003.*

24. F. Cheriet, **L. Remaki**, C. Bellefleur, A. Koller, H. Labelle, J. Dansereau, *"A New X-Ray Calibration/Reconstruction System for 3D Clinical Assessment of Spinal Deformities", in Studies in Health Technology and Informatics Vol. 91 (IRSSD 2002), pp. 257-261}, May 2002*

25. S. Bernard, J.F. Colombeau, A. Meul, **L. Remaki**, “Conservation laws with discontinuous coefficients, ” *Journal of Mathematical Analysis And Applications.* Vol. 258, No. 1, Jun 2001, pp. 63-86.

26. **L. Remaki** and M. Cheriet, “KCS - New Kernel Family with Compact Support in Scale Space : Formulation & Impact,” *IEEE Transaction on Image Processing, Vol. 9, No. 6., p.970 Juin 2000.*

27. **L. Remaki**, F. Cheriet, C. Bellefleur, H. Labelle, J. Dansereau, *"A Robustness Study of Self-calibration Technique for the Radiographic 3D Reconstruction of Human Spine", in Archives Physiology and Biochemistry, vol. 108, no. 1/2, 2000.*

Conferences with proceedings

28. I. Garcia and **L.Remaki**,”High-Order time integration Numerical Method by Adomian Decomposition Method and Simple Method Coupling for incompressible Euler Equations,” *ECCOMAS, the VII European Congress on Computational Methods in Applied Sciences and Engineering* 5- 10 June 2016, Crete, Greece.

29. I. Bidaguren, **L. Remaki** and J.M. Blanco, “Snapshots Local Improvement Using Local Mesh Adaptivity Techniques for the Reduced Model Approach,” *ECCOMAS, the VII European Congress on Computational Methods in Applied Sciences and Engineering* 5- 10 June 2016, Crete, Greece.

30. A. Ramezani, G. Stipcich, **L. Remaki**, "Discontinuous high-order finite-volume/finite-element method for inviscid compressible flows". 53rd AIAA Aerospace Sciences Meeting (2015), DOI: 10.2514/6.2015-0823

31. I. Bidaguren, **L. Remaki1** and J.M. Blanco, “New effective basis system for the pod-snapshots based reduction models” in proceeding of Congresso de Metodos Numericos em Engenharia 2015 Lisboa, 29 de Junho a 2 de Julho 2015 c APMTAC, Portugal 2015

32. G. Stipcich, A. Ramezani, V. Nava, I. Touzon, M. Sanchez-Lara and **L. Remaki**, "Numerical investigation of the aerodynamic performance for a wells-type turbine in a wave energy converter", VI international conference on computational methods in marine engineering, marine 2015

33. **L. Remaki**, A. Ramezani, J.M Blanco, J.I Antolin, “Efficient Rotating Frame Simulation in Turbomachinery,” ASME Turbo Expo 2014, Dusseldorf, Germany, June 16-20 2014

34. **L. Remaki** , J.I Antolin Suarez , T. Crespo and I.G de Beristain, "Steady flow Simulation in Turbofans," 21st Annual Conference of the CFD Society of Canada, May 6-9, 2013 - Sherbrooke, Quebec, Canada.

35. **L. Remaki** O. Hassan, B. Evans, and K. Morgan "Fluidized Sand Effect for Drag Forces on a Supersonic Vehicle," ICCFD 2012*, International Conference on Computational Fluid Dynamic* 2- August, Paris.

36. **L. Remaki**, O. Hassan and K. Morgan "New Limiter and Gradient Reconstruction Method for HLLC-Finite Volume Scheme to Solve Navier-Stokes Equations," *ECCOMAS, the fifth European Congress on Computational in Fluid Dynamic* 14 - 17 June 2010, Lisbon, Portugal.

37. **L. Remaki**, O. Hassan and K. Morgan "Spray Drag Model for Bloodhound SSC Supersonic Vehicule," *ECCOMAS, the fifth European Congress on Computational in Fluid Dynamic* 14 - 17 June 2010, Lisbon, Portugal.

38. **L. Remaki**, X. Zhongqiang, O. Hassan and K. Morgan "Anisotropic Mesh Generation using Delaunay techniques," The 11th ISGG Conference. Montreal, Canada, 25 –2 8 May 2009

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Books Chapters

71. B.J. Evans, O. Hassan, J.W. Jones, K. Morgan,, L. Remaki "Simulating Steady State and Transient Aerodynamics Flows Using Unstructured Meshes and Parallel Computers", *COMPUTATIONAL FLUID DYNAMICS REVIEW 2010.E*edited by M M Hafez (University of California, Davis, USA), K Oshima (University of Tokyo, Japan), & D Kwak (NASA Ames Research Center, USA)

Electronic publications

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Workshops and Seminars

73. "Image processing for biomedical applications", Alfaisal Uniersity , college of science, 22-10-2019
74. "Computational Fluid Dynamics in Industrial and Biomedical Applications", Alfaisal University, college of science, 06-02-1019
75. "Computational Fluid Dynamics Applications and Big Data Limitations", Alfaisal University, college of science, 24-12-1017
76. "Waves speed averaging effect on Godunov type schemes", The Second Basque-Hungarian Workshop on Numerical Methods for PDEs, January 12-13 2015
77. "BBIPED CFD Platform: Application to Turbomachinery Simulation and Design", March 28, 2014, BCAM, Bilbao, Spain.
78. "Dual mesh finite-volume method for flow motion simulation, ", BCAM Workshop on Computational Mathematics, October 02, 2012, BCAM-Bilbao, Spain.
79. "On some Aspects of Mesh Adaptation in CFD and Industrial Applications, ", Aquitaine-Euskadi Workshop on Applied Mathematics, June 06, 2012, BCAM-Bilbao, Spain
80. "Anisotropic Adaptivity in the Context of Delaunay Triangulation, ", Tetrahedron WorkshopIII, The International Workshop on Grid Generation for Numerical Computations September 14–15, 2010 Swansea University, Swansea, UK.
81. "CFD in Industrial Applications and Mesh Improvement Shock-Filter for Multiple Discontinuities Capturing,", BCAM Seminars, May 24, 2012, BCAM-Bilbao, Spain.

Invited Talks

82. "Dual-mesh finite volume for CFD simulations", REM (Mater program co-funded by ERASMUS and Program for European union), UPV/EHU, Bilbao Spain, 26-06-2019
83. "Fluid dynamic simulation and mesh adaptivity for industrial applications", Institut Élie Cartan de Lorraine, Metz, France, 10-10-2014
84. "On Optimization in Industrial applications", international conference PICOF 2014 to be held in Tunis, 7-9 May, 2014.
85. "Flow Simulation for Aerodynamic Optimal Design in Industry", Congrès SMAI 2013, Seignosse le Penon (Landes), 27-31 Mai 2013

86. "Large Scale Simulations of Turbulent Flows for Industrial Applications", APPLIED FLUID MECHANICS, University College of Engineering Vitoria-Gasteiz, April 23rd 2013.
87. "On CFD Industrial Applications and Some Numerical Issues, ", June 29, 2012, Escuela Técnica Superior de Ingeniería, Universidad del País Vasco / Euskal Herriko Unibertsitatea
88. "New Advances in Finite Volume Scheme and Application to Supersonic Car Aerodynamic Analysis, ", April 08, 2011, Laval University, Canada
89. Invited speaker jointly with professor W. Habashi from McGill University, Canada at the 11th ISGG Conference. Montreal, Canada, 25 –2 8 May 2009
90. "PDEs shock-filter model for multiple shocks capturing in mesh adaptation", Seminar Computational Science and Engineering McGill University, April 21, 2006.

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