Alberto Cuadra Lara

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Work Experience

Jul 2019 -	**Pre-doctoral researcher in Fluid Mechanics**, Fluid Mechanics Group, Universidad Carlos III de Madrid, Spain. Advisors: Marcos Vera & César Huete
Mar 2019 - Jun 2019	**Research Technician in Fluid Mechanics**, Fluid Mechanics Group, Universidad Carlos III de Madrid, Spain. Advisors: Marcos Vera
Oct 2018 - Jan 2019	**M.Sc research assistant**, Fluid Mechanics Group, Universidad Carlos III de Madrid, Spain. Advisors: Marcos Vera

Education

Jul 2019 - Dec 2022	**Ph.D. in Fluid Mechanics, Universidad Carlos III de Madrid**
Sept 2017 - Feb 2019	**M.Sc. Applied Mathematics, Universidad Carlos III de Madrid** Thesis title: Development of a thermochemical code with teaching and research applications. GPA: 3.68/4.0
Oct 2011 - Jul 2017	**B.Sc. Industrial Technologies Engineering, Universidad de Málaga** Thesis title: Numerical study of a diffusion flame with axial co-flow using ANSYS Fluent. GPA: 3.08/4.0

Fellowships

Oct 2017 - Jan 2018	**M.Sc Research Assistant Fellowship**, Universidad Carlos III de Madrid
Sep 2016 - Dec 2016	**Study-stay under Convocatoria Iberoamérica**, Ministerio de Educación, Spain. Destination: Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico. GPA: 3.58/4.0
Oct 2014 - Jul 2015	**Study-stay under ERASMUS +**, Ministerio de Educación, Spain. Destionation: Universitatea Politehnica din București, Romania. GPA: 3.39/4.0

Languages

English: Fluent
Spanish: Mothertongue

Publications

Journal Articles

1. Huete, C., **Cuadra, A.**, Vera, M., & Urzay, J. (2021). Thermochemical effects on hypersonic shock waves interacting with weak turbulence. Physics of Fluids 33, 086111 (2021) (featured article). https://doi.org/10.1063/5.0059948
2. **Cuadra, A.**, Huete, C., & Vera, M. (2020). Effect of equivalence ratio fluctuations on planar detonation discontinuities. Journal of Fluid Mechanics, 903, A30. https://doi.org/10.1017/jfm.2020.651

Relevant Code contribution

1. **Cuadra, A.**, Huete, C., & Vera, M. (2021). Combustion Toolbox: A MATLAB-GUI based open-source tool for solving combustion problems. (v0.3.74). Zenodo. https://doi.org/10.5281/zenodo.5599436.

Conference contribution

1. **Cuadra, A.**, Huete, C., Vera, M., & Urzay, J. (2021). Theory of turbulence augmentation across hypersonic shock waves. In 74th Annual Meeting of the Division of Fluid Dynamics (APS DFD), Phoenix, U.S.A.

2. **Cuadra, A.**, Huete, C., & Vera, M. (2021). Effect of fuel mass fraction heterogeneity on the detonation propagation speed. In 25th International Congress of Theoretical and Applied Mechanics (ICTAM), Milano, Italy.
3. Huete, C., **Cuadra, A.**, & Vera, M. (2019). Stability of non-adiabatic shock waves. In 27th International Colloquium on the Dynamics of Explosions and Reactive Systems (ICDERS), Beijing, China.
4. **Cuadra, A.**, & Vera, M. (2019). Development and validation of a new MATLAB®/GUI based thermochemical code. In 11th International Mediterranean Combustion Symposium (MSC), Tenerife, Spain.
5. **Cuadra, A.**, & Vera, M. (2019). Development of a GUI-based thermochemical code with teaching and research. In 1st Colloquium of the Spanish Theoretical and Applied Mechanics Society (STAMS), Madrid, Spain.
6. Huete, C., Melendez, A., **Cuadra, A.**, Sánchez, J., & Vera, M. (2018). Simulación del efecto de ondas expansivas sobre estructuras porticadas. In 6th Congreso Nacional de I+D en Defensa y Seguridad, Valladolid, Spain.

5.1 Seminars & Workshops

1. **Cuadra, A.**, Huete, C. & Vera, M. (2019). Turbulence generation by planar detonations in heterogeneous mixtures. In Workshop on Fluid Mechanics, Granada, Spain.

Teaching

2019 - 2022	**Aero-thermochemistry** (Lab sessions)	Universidad Carlos III de Madrid
2019 - 2022	**Explosion Dynamics** (Lab sessions)	Centro Universitario de la Guardia Civil
2019 - 2022	**Fluid Mechanics** (Lab sessions)	Universidad Carlos III de Madrid

Student Advising

B.Sc level

2021 - 2022	1-end-of-degree projects	Universidad Carlos III de Madrid
2019 - 2020	1-internship projects	Universidad Carlos III de Madrid Sending: ENSTA Bretagne, France