

Felipe Crivellaro Minuzzi

🏛️ Departament of Mathematics, UFSM, Santa Maria, RS, Brazil

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Appointments

Federal University of Santa Maria - UFSM

Adjunct Professor

2023 - curr.

Santa Maria, RS

Federal University of Rio Grande do Sul - UFRGS

ONR Post-Doctoral Research Assistant

Project: Ocean waves forecast using deep learning.

2020 - 2022

Porto Alegre, RS

National Institute of Space Research - INPE

CAPES Post-Doctoral Reserch Assistant

Project: Numerical study of soot formation in Tsuji burner using REDIM.

2018 - 2020

Cachoeira Paulista, SP

Education

Federal University of Rio Grande do Sul - UFRGS

PhD in Applied Mathematics

Dissertation: Reduction Techniques Applied to the Oxidation of Ethanol.

2015 - 2018

Porto Alegre, RS

Karlsruhe Institute of Technology - KIT

PhD Internship

Research stay at the Institute of Technical Thermodynamics.

2017 - 2018

Karlsruhe, BW

Federal University of Santa Maria - UFSM

MSc in Mathematics

Dissertation: Navier-Stokes Equations in three Dimensional Domains.

2012 - 2014

Santa Maria, RS

Awards & Fellowships

2020: ONR Post-Doctoral Fellowship;

2018: CAPES Post-Doctoral - PNPD Fellowship;

2018: CNPq PhD Fellowship;

2017: CAPES - PDSE Sandwich PhD Fellowship;

2015: CAPES PhD Fellowship;

2012: CAPES MSc Fellowship.

List of Publications

Minuzzi, F. C., Farina, L. Artificial neural networks ensemble methodology to predict significant wave height. *submitted to Ocean Engineering*, 2023.

Minuzzi, F. C., Farina, L. A deep learning approach to predict significant wave height using long short-term memory. *Ocean Modelling*, v.18, p.102151, 2023.

Yu, C., Cai L., Chopra, L., Minuzzi, F. C., Maas, U. Influence of the chemical kinetics on the prediction of turbulent non-premixed jet CH₄ flames. *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, v.45, p.525, 2023.

Minuzzi, F. C., , Reaction diffusion manifolds (REDIMs) applied to soot formation in ethylene counterflow non-premixed flames: an uncoupled methodology. *Computational and Applied Mathematics*, v. 41, p. 334, 2022.

Yu, C., Breda, P., Minuzzi, F. C., Pfitzner, M., Maas, U. A novel model for incorporation of differential diffusion effects in PDF simulations of non-premixed turbulent flames based on reaction-diffusion manifolds (REDIM). *Physics of Fluids*, v. 33, p. 025110, 2021.

Minuzzi, F. C., Pinho, J. M. A new skeletal mechanism for ethanol using a modified implementation methodology based on directed relation graph (DRG) technique. *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, v. 42, p. 105, 2020.

Yu, C., Minuzzi, F. C., Maas, U. REDIM reduced chemistry for the simulation of counterflow diffusion flames with oscillating strain rates. *Combustion Theory and Modelling*, v. 4, p. 1-23, 2020.

Minuzzi, F. C., Yu, C., Maas, U. Numerical Simulation of Laminar and Turbulent Methane/Air Flames Based on a DRG-Derived Skeletal Mechanism. *Eurasian Chemico-Technological Journal*, v. 22, p. 69-80, 2020.

Minuzzi, F. C.; Yu. C.; Maas, U. Simulation of methane/air non-premixed turbulent flames based on REDIM simplified chemistry. *Flow, Turbulence and Combustion*, v. 103, p. 963-984, 2019.

Yu, C. Minuzzi, F. C., Viatcheslav, B., Maas, U. Methane/Air Auto-Ignition Based on Global Quasi-Linearization (GQL) and Directed Relation Graph (DRG): Implementation and Comparison. *Combustion Science and Technology*, v. 9, p. 1-23, 2019.

Yu, C., Minuzzi, F. C., Maas, U. Numerical Simulation of Turbulent Flames based on a Hybrid RANS/Transported-PDF Method and REDIM Method. *Eurasian Chemico-Technological Journal*, v. 20, p. 23-31, 2018.

Minuzzi, F. C., Bublitz, C., Bortoli, A. Development of a reduced mechanism for ethanol using directed relation graph and sensitivity analysis. *Journal of Mathematical Chemistry*, v. 55, p. 1342-1359, 2017.

Mar, 2023: *Neural networks training frameworks to forecast ocean waves.*, University of Melbourne;

Nov, 2021: *Artificial Intelligence applied to ocean waves forecast: A deep learning approach to predict significant wave height*, Basque Centre for Climate Change (BC3).

Contributed Talks

May, 2023: *Previsão da altura significativa de ondas usando aprendizado de máquina*, XI ERMAC - RS - Encontro Regional de Matemática Aplicada e Computacional do Rio grande do Sul.

May, 2019: *Steady and unsteady behaviours of methane/air counterflow non-premixed flames based on REDIM reduced chemistry*, 17th International Conference on Numerical Combustion;

July, 2018: *Simulation of methane/air non-premixed turbulent flames based on REDIM simplified chemistry*, THMT 2018 - 9th International Symposium On Turbulence, Heat and Mass Transfer;

Sept, 2016: *Development of a Reduced Kinetic Mechanism for Ethanol Based on DRG and Sensitivity Analysis*, 36th CNMAC;

Nov, 2016: *Analysis of Turbulent Diffusion Flames of Ethanol based on a Reduced Kinetic Mechanism*, 7th MCSul;

Nov, 2016: *Obtainment of a Reduced Kinetic Mechanism for Biodiesel Surrogates Using Directed Relation Graph and Sensitivity Analysis*, 37th CILAMCE;

Feb, 2014: *Global solutions of the Navier-Stokes equations in thin domains with different boudary conditions*, CMAC Sul;

Nov, 2013: *Navier-Stokes equations in 3D domains with one thin dimension*, VII ENAMA.