Felipe Crivellaro Minuzzi

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Appointments

Federal University of Rio Grande do Sul - UFRGS **2025 - curr.**
Assistant Professor Porto Alegre, RS

Federal University of Santa Maria - UFSM **2023 - 2025**
Assistant Professor Santa Maria, RS

Federal University of Rio Grande do Sul - UFRGS **2020 - 2022**
ONR Post-Doctoral Reserch Assistant Porto Alegre, RS
Project: Ocean waves forecast using deep learning.

National Institute of Space Research - INPE **2018 - 2020**
CAPES Post-Doctoral Reserch Assistant Cachoeira Paulista, SP
Project: Numerical study of soot formation in Tsuji burner using REDIM.

Education

Federal University of Rio Grande do Sul - UFRGS **2015 - 2018**
PhD in Applied Mathematics Porto Alegre, RS
Dissertation: Reduction Techniques Applied to the Oxidation of Ethanol.

Karlsruhe Institute of Technology - KIT **2017 - 2018**
PhD Internship Karlsruhe, BW
Research stay at the Institute of Technical Thermodynamics.

Federal University of Santa Maria - UFSM **2012 - 2014**
MSc in Mathematics Santa Maria, RS
Dissertation: Navier-Stokes Equations in three Dimensional Domains.

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. *Ocean Engineering*, v. 300, p.117479, 2024.

Yu, C., Malayeri, M. M., Böhlke, T., Chen, Z., Minuzzi, F. C. Mathematical thermo-mechanical analysis on flame-solid interaction: Steady laminar stagnation flow flame stabilized at a plane wall coupled with thermo-elasticity model. *AMM-Zeitschrift fur Angewandte Mathematik und Mechanik*, v. 104, p.1, 2024.

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 CH_4 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. 682-704, 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.

Invited Talks, Seminars & Colloquia

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

Sept, 2024: *Prediction of Significant Wave Heights by an Ensemble of Neural Networks*, XLIII CNMAC - Congresso Nacional de Matemática Aplicada e Computacional.
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.