



SEBASTIÁN REYES RIFFO

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RESEARCH INTERESTS

I am attracted by the opportunity to work in a multidisciplinary team, on problems related with mathematical modeling, control theory, numerical analysis and domain decomposition methods.

PROFESSIONAL EXPERIENCE

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| 10.2020 - 09.2021 | Postdoctoral researcher. Géoazur, CNRS-Université Côte d'Azur. <ul style="list-style-type: none">◦ Development of a Schwarz preconditioner for solving a finite-difference discretization of the Helmholtz Equation.◦ Implementation of an interface between Fortran codes and PETSc. |
| 02.2016 - 11.2019 | PhD student. CEREMADE, Université Paris Dauphine-PSL. <ul style="list-style-type: none">◦ Development of a procedure for coupling unbounded in time data assimilation methods with time-parallel algorithms. Performance study.◦ Convergence analysis of an algorithm for blade construction.◦ Optimization of a tidal turbine propeller.◦ Modeling of a bathymetry determination problem.◦ Development of a theoretical framework for the problems mentioned above. |
| 05.2015 - 09.2015 | Research Internship. Team ANGE, INRIA Paris. <ul style="list-style-type: none">◦ Development of an algorithm for bathymetry determination.◦ Convergence analysis of the associated numerical solver. |
| 04.2014 - 08.2014 | Research Assistant. ISCI, Universidad de Chile. <ul style="list-style-type: none">◦ Study of pattern formation related to criminal activity. |
| 06.2011 - 10.2013 | Research Assistant. CEAMOS, Universidad de Chile. <ul style="list-style-type: none">◦ Mathematical modeling of criminal activity.◦ Theoretical analysis and numerical simulation of bifurcation branches. |
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EDUCATION

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| 2019 | PhD in Applied Mathematics. Université Paris Dauphine-PSL.
<i>Mathematical methods for marine energy extraction.</i>
Thesis directed by Julien Salomon. |
| 2015 | Master 2 in Applied Mathematics. Université Paris Dauphine-PSL. |
| 2013 | Mathematical Engineering. Universidad de Chile. |
| 2012 | Bachelor of Sciences. Major in Mathematics. Universidad de Chile. |
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LANGUAGES Spanish (Native), English (fluent), French (fluent).

COMPUTER SKILLS \LaTeX , Matlab, FreeFem++, Fortran, Python, C++.

CONFERENCES

07-12.12.2020	<i>Time-parallelization of sequential data assimilation problems.</i> 26th International Conference on Domain Decomposition Methods (DD26). Chinese University of Hong Kong, Hong Kong, China.
10-11.12.2020	12th Conference FreeFEM Days. Laboratoire Jacques-Louis Lions (LJLL), Paris, France.
02-04.07.2019	2nd Conference on Simulation and Optimization for Renewable Marine Energies (EMRSIM19). Roscoff Marine Station, Roscoff, France.
02-05.09.2018	7th Workshop on Parallel-in-Time Methods (PinT18). Roscoff Marine Station, Roscoff, France.
06-10.02.2017	24th International Conference on Domain Decomposition Methods (DD24). University of Bergen, Longyearbyen, Norway.
27-29.03.2014	3rd French-Chilean Workshop on Bioprocess Modeling. Universidad Técnica Federico Santa María, Valparaíso, Chile.

SEMINARS

23.06.2016	<i>Mathematical methods for marine energy extraction.</i> Team ANGE, INRIA Paris, France.
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RESEARCH VISITS

11.2017	Visit to the Department of Mathematics of HKBU, Hong Kong, China, for a collaboration with Felix Kwok.
10.2016	Visit to the Department of Mathematics of HKBU, Hong Kong, China, for a collaboration with Felix Kwok.

PUBLICATIONS

- [1] P.-H. Cocquet, S. Rizzo, J. Salomon. *Optimization of bathymetry for long waves with small amplitude*. To appear in SIAM Journal on Control and Optimization (SICON).
- [2] J. Ledoux, S. Rizzo, J. Salomon. *Analysis of the Blade Element Momentum Theory*. To appear in SIAM Journal on Applied Mathematics (SIAP).
- [3] F. Kwok, S. Rizzo, J. Salomon. *Time-parallelization of sequential data assimilation problems*. Available upon request.
- [4] P.-H. Tournier, P. Jolivet, V. Dolean, H. Aghamiry, S. Operto and S. Rizzo. *Large-scale 3D frequency-domain wave simulation with finite-element and finite-difference methods and an optimized additive Schwarz domain-decomposition preconditioner: A tool for FWI of sparse node datasets*. Available upon request.

TEACHING EXPERIENCE

2017 - 2019	Assistant Teacher (~60h). MIDO, Université Paris Dauphine-PSL. <ul style="list-style-type: none">◦ Complex Analysis.◦ Linear Algebra 3.
01.2018	Lecturer. EdV, Universidad de Chile. <ul style="list-style-type: none">◦ An introduction to Abstract Algebra.
2011 - 2013	Coordinator. EdV, Universidad de Chile. <ul style="list-style-type: none">◦ Leading a team of assistant teachers (between eight and fourteen, depending on the year) and be in charge of all aspects of different mathematics courses, which together had approximately four hundred high school students.
2008 - 2013	Assistant Teacher (~160h). DIM, Universidad de Chile. <ul style="list-style-type: none">◦ Probability and Statistics.◦ Introduction to Partial Differential Equations.◦ Ordinary Differential Equations.◦ Algebra 1.◦ Linear Algebra.◦ Single Variable Calculus.

AWARDS

2015	Doctoral contract granted by École Doctorale de Dauphine.
2014	Master scholarship granted by Fondation Sciences Mathématiques de Paris.
2006	Excellence scholarship granted by Universidad de Chile.