



AIT AMEUR, Katia
E-MAIL: katia.ait-ameur@inria.fr
TELEPHONE: 06 67 94 69 65
DATE OF BIRTH: 30/08/1993
NATIONALITY: French and Algerian

POSITIONS

11/23-..	Post-doctoral researcher , LEMON team, INRIA antenna of University of Montpellier and INRIA Chile
SUPERVISORS:	Antoine Rousseau, Gwladys Toulemonde, Luis Marti and Nayat Sanchez-Pi
SUBJECT:	Downscaling for Urban Floods simulations with Artificial Intelligence Tools
10/20-10/23	Post-doctoral researcher , CMAP, École Polytechnique
SUPERVISORS:	Marc Massot, Teddy Pichard and Samuel Kokh
SUBJECT:	Derivation of two-phase flow models from separated to dispersed-flows regime and numerical methods within a massively parallel computing context
2016-2020	PhD in Numerical Analysis and Scientific Computing , LJLL, Sorbonne University and CEA
SUPERVISORS:	Yvon Maday and Marc Tajchman
SUBJECT:	Time parallel method for the CATHARE code, dedicated to the simulation of two-phase flows within a nuclear reactor and analysis of finite volume schemes on staggered grids (part of the ANR project CINE-PARA)
03/16 - 09/16	Internship , LAGA, University Sorbonne Paris Nord and CEA
SUPERVISORS:	Caroline Japhet, Pascal Omnes and Mathieu Peybernes
SUBJECT:	Optimized Schwarz Waveform Relaxation methods with Robin transmission conditions for the incompressible Stokes system. Application to the Trio-CFD code, dedicated to the simulation of turbulent flows within nuclear reactor cores
	• 18/07/16 - 26/08/16: Participation to the CEMRACS summer school <i>Numerical challenges in parallel scientific computing, Marseille</i>

EDUCATION

2016-2020	PhD in Numerical Analysis and Scientific Computing , LJLL, Sorbonne University and CEA
2014-2016	Master in Mathematical Engineering , major in Numerical Analysis and Scientific Computing, Sorbonne University, with honors
2011-2014	Bachelor in Mathematics , Sorbonne University, Distance education

PUBLICATIONS

1. K. A., Y. Maday, M. Tajchman. Time-parallel algorithm for two phase flows simulation, [preprint](#), [PDF](#), Numerical Simulation in Physics and Engineering : Trends and Applications, Lecture Notes of the XVIII Jacques-Louis Lions Spanish-French School, pp. 169-178 , 2019
2. K. A., Y. Maday, M. Tajchman. Multi-step variant of parareal algorithm, [preprint](#), [PDF](#) Domain Decomposition Methods in Science and Engineering XXV, Series Lecture Notes in Computational Science and Engineering, pp. 393-400, 2020
3. K. A., M. Ndjinga. A new class of L^2 -stable schemes for the isentropic Euler equations on staggered grids, [preprint](#), [PDF](#), Finite Volumes for Complex Applications IX, Editors: Robert Kloforn, Erik Keilegavlen, Adrian Florin Radu, Jurgen Fuhrmann, pp. 425-433, 2020

4. Contributions to the parallel simulation of two-phase flows and analysis of finite volume schemes on staggered grids. [PhD thesis](#). Sorbonne University, 2020
5. K. A., S. Kokh, M. Massot, M. Pelanti, T. Pichard. A Lagrange-projection like splitting method for the isentropic Baer-Nunziato model, [preprint](#), [PDF](#), ESAIM: Proceeding and surveys, 72, pp. 94-116, 2023
6. K. A., M. Ndjinga. TVD analysis of a (pseudo-)staggered scheme for the isentropic Euler equations, [preprint](#), [PDF](#), In: Franck, E., Fuhrmann, J., Michel-Dansac, V., Navoret, L. (eds) Finite Volumes for Complex Applications X-Volume 2, Hyperbolic and Related Problems. FVCA 2023. Springer Proceedings in Mathematics & Statistics, vol 433. Springer, Cham, pp. 249-257, 2023
7. K. A., Y. Maday. Multi-step variant of the parareal algorithm: convergence analysis and numerics, ESAIM: M2AN, Volume 58, Number 2, pp. 673-694, 2024, [preprint](#), [PDF](#)
8. K. A., M. Essadki, M. Massot, T. Pichard. Limitation strategies for high-order discontinuous Galerkin schemes applied to an Eulerian model of polydisperse sprays, *under review*, [preprint](#)

RESEARCH SOFTWARE CONTRIBUTIONS

- 2023 Implementation of high order Discontinuous Galerkin methods for two-phase flow models, in the Python library [Josiepy](#), a 2D PDE solver.
- 2020 Implementation of finite volume schemes on staggered grids in the toolbox [CDMATH](#).
- 2019 Design of a library in Fortran and parallelization (MPI) allowing to apply a time domain decomposition to the [Cathare](#) code .
- 2018 Design of a numerical clone (C++) of the Cathare code in 1D with a staggered finite volume scheme.

RESEARCH STAY

- 12/23 Research stay in INRIA Chile for collaboration with Luis Marti and Nayat Sanchez-Pi (1 month).

TEACHING ASSISTANT

- 11/20, 11/21 Supervising a project about the simulation of Arenstorf orbits with the parareal algorithm, in the course [MAP551](#), École Polytechnique
- 03-07/19 Course on numerical methods for nonlinear hyperbolic systems (15h), CEA
- 2018-2019 Exercises part of the course Maths for scientific studies for 1st year students (60h), BSc. Physics, Sorbonne University
- Spring 2018 Computational classes of C programming for the course ODEs and numerical methods for 3rd year students (30h), Sup Galilée engineering school, University Sorbonne Paris Nord

SIDE ACTIVITIES

- 11/23-.. Volunteer in the local committee of AGOS in the INRIA antenna of University of Montpellier.
- 06/22 Organizer of a mini-symposium dedicated to Lagrange-Projection methods during CANUM Congress.
- 04/21-06/23 Organizer of the team HPC@Maths seminar in CMAP.
- 09/21-01/23 Representative of Post-doctoral researchers at the committee of CMAP laboratory.
- 11/19 Meeting between Sorbonne master students and LJLL PhD students, Sorbonne University

FUNDING RECEIVED AND AWARDS

- 2023 2-years post-doctoral fellowship from Direction Relations Internationales, INRIA
- 2023 Best Poster Award (500 €), Operations CIEDS 2023
- 2020 DIM-Math-Innov post-doctoral fellowship
- 2018 Jacques Louis Lions Summer school travel grant from SMAI
- 2018 Best Poster Award, French and spanish Jacques Louis Lions Summer school

LIST OF TALKS AND POSTER PRESENTATIONS

- 01/24 Seminar ACSIOM, IMAG, Université de Montpellier.
- 12/23 Scientific Days INRIA Chile 2023, Universidad de Concepción, Chile.
- 06/23 Workshop on Assimilation, Control and Computational Speedup, Université Sorbonne Paris Nord.
- 05/23 Seminar EDP et Calcul Scientifique, LMRS, Université de Rouen.
- 04/23 11th International Conference on Multiphase Flow (ICMF 2023), Kobe, Japan.
- 03/23 Seminar Analyse Appliquée, Institut de Mathématiques de Marseille, Aix-Marseille Université.
- 02/23 SIAM Conference on Computational Science and Engineering (CSE23), Amsterdam.
- 11/22 Workshop Schémas numériques de Type Boltzmann, Institut de Mathématiques de Bordeaux.
- 09/22 New Trends in Complex Flows, Institut Henri Poincaré, Paris.
- 06/22 CANUM Congress, Evian-les-bains.
- 06/22 ECCOMAS Congress, Oslo.
- 03/22 LAGA seminar, Université Sorbonne Paris Nord.
- 03/22 ANEDP seminar, Laboratoire Paul Painlevé, Université de Lille.
- 11/21 Seminar EDPA at Poitiers University
- 10/21 Poster session, Meeting of the MaNu working group, Croisic (France)
- 06/21 Mini-symposium on "Moment methods derived from a kinetic equation", SMAI Congress, Grande-Motte (France)
- 03/21 Copper Mountain Conference on Multigrid methods, online
- 12/20 Numerical Analysis Congress CANUM junior, online conference
- 09/20 Numerical analysis working group of STMF, CEA (Saclay center)
- 06/19 ANR project CINE-PARA day, Paris Dauphine University
- 05/19 SMAI Congress, Morbihan (France)
- 07/18 DD25, International domain decomposition methods conference, Canada
- 06/18 Poster session, Spanish-French School Jacques-Louis Lions about Numerical Simulation in Physics and Engineering, Spain

05/18 7th Workshop on Parallel in time integration, Station Marine de Roscoff (France)

02/17 LRC MANON working group, Sorbonne University

SCIENTIFIC DISSEMINATION TO THE GREATER PUBLIC

07/19 Popularization talk during the [Summer school for female high school students](#), ESPCI (Paris)

10/18 Organised science popularization events in high schools during the "Fête de la Science" (Paris)

PROGRAMMING AND LANGUAGE SKILLS

Programming : C/C++, MPI, Python, Freefem++, Latex Languages : French, English