

LISTE DES PUBLICATIONS

Frédérique LAURENT-NÈGRE

Publications dans des revues à comité de lecture

- [L1] R. O. Fox, F. Laurent, A. Vié, “Conditional Hyperbolic Quadrature Method of Moments for Kinetic Equations”, *Journal of Computational Physics*, 365, pp. 269–293 (2018).
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- [L2] A. Passalacqua, F. Laurent, E. Madadi-Kandjani, J. C. Heylmun, R. O. Fox, “An open-source quadrature-based population balance solver for OpenFOAM”, *Chemical Engineering Science*, 176, pp. 306–318 (2018).
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- [L3] C. Chalons, R. O. Fox, F. Laurent, M. Massot, and A. Vié, “Multivariate Gaussian extended quadrature method of moments for turbulent disperse multiphase flow”, *SIAM Multiscale Modeling and Simulation* 15.4, pp. 1553-1583 (2017).
<https://hal.archives-ouvertes.fr/hal-01358390>
- [L4] F. Laurent, T. T. Nguyen “Realizable high-order finite-volume schemes for the advection of moment sets of the particle size distribution”, *Journal of Computational Physics*, 337, pp. 309-338 (2017).
<https://hal.archives-ouvertes.fr/hal-01345689>
- [L5] A. Sibra, J. Dupays, A. Murrone, F. Laurent, M. Massot, “Simulation of reactive polydisperse sprays strongly coupled to unsteady flows in solid rocket motors : Efficient strategy using Eulerian Multi-Fluid methods”, *Journal of Computational Physics*, 339, pp. 210 -246 (2017).
<https://hal.archives-ouvertes.fr/hal-01063816>
- [L6] A. Wick, T. T. Nguyen, F. Laurent, R. O. Fox, H. Pitsch, “Modeling Soot Oxidation with the Extended Quadrature Method of Moments”, *Proceedings of the Combustion Institute*, 36(1), pp. 789 -797 (2017).
- [L7] M. Essadki, S. de Chaisemartin, S. Jay, M. Massot, F. Laurent, A. Larat, “Adaptive mesh refinement for polydisperse spray simulation”, in *Oil & Gas Science and Technology*, 71(5) 61 (2016). DOI : 10.2516/ogst/2016012
<https://hal.archives-ouvertes.fr/hal-01395317>
- [L8] F. Laurent, A. Sibra, F. Doisneau, “Two-size moment multi-fluid model : a robust and high-fidelity description of polydisperse moderately dense evaporating sprays”, *Communications in Computational Physics*, 20 (4), pp. 902-943 (2016).
<https://hal.archives-ouvertes.fr/hal-01169730>, doi:10.4208/cicp.300615.050216a
- [L9] T. T. Nguyen, F. Laurent, R. O. Fox, M. Massot, “Solution of population balance equations in applications with fine particles : mathematical modeling and numerical schemes”, *Journal of Computational Physics* 325, pp. 129-156 (2016).
<https://hal.archives-ouvertes.fr/hal-01247390>.

- [L10] O. Emre, D. Kah, S. Jay, Q.H. Tran, A. Velghe, S. de Chaisemartin, F. Laurent, and M. Massot, “Eulerian Moment Methods for Automotive Sprays”, *Atomization and Sprays*, 25 (3), pp.189-254 (2015).
<https://hal-ifs.archives-ouvertes.fr/hal-01097531>
- [L11] D. Kah, O. Emre, Q.H. Tran, S. de Chaisemartin, S. Jay, F. Laurent, and M. Massot, “High order moment method for polydisperse evaporating sprays with mesh movement : Application to internal combustion engines”, *International Journal of Multiphase Flow*, vol. 71, pp 38-65 (2015).
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- [L12] F. Doisneau, A. Sibra, J. Dupays, A. Murrone, F. Laurent, and M. Massot, “Numerical strategy for unsteady two-way coupling in polydisperse sprays : application to Solid Rocket Motor instabilities”, *Journal of Propulsion and Power*, Vol. 30, No. 3, pp. 727-748 (2014).
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- [L13] O. Emre, R. O. Fox, M. Massot S. de Chaisemartin, S. Jay and F. Laurent, “Towards Eulerian Modeling of a Polydisperse Evaporating Spray Under Realistic Internal-Combustion-Engine Conditions”, *Flow Turbulence and Combustion*, Volume 93, Issue 4, pp 689-722 (2014)
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- [L14] S. Descombes, M. Duarte, T. Dumont, F. Laurent, V. Louvet, M. Massot, “Analysis of operator splitting in the non-asymptotic regime for nonlinear reaction diffusion equations. Application to the dynamics of premixed flames”, *SIAM Journal on Numerical Analysis*, 52 (3), pp. 1311-1334 (2014).
<http://hal.archives-ouvertes.fr/hal-00837089>
- [L15] F. Doisneau, F. Laurent, A. Murrone, J. Dupays, M. Massot, “Eulerian Multi-Fluid models for the simulation of dynamics and coalescence of particles in solid propellant combustion”, *Journal of Computational Physics*, vol. 234, pp. 230-262, 2013.
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- [L16] F. Doisneau, J. Dupays, A. Murrone, F. Laurent, and M. Massot, “Eulerian versus Lagrangian simulation of unsteady two-way coupled coalescing two-phase flows in solid propellant combustion”, *Comptes Rendus Mecanique*, vol. 341, no. 1-2, pp. 44-54, 2013.
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- [L17] A. Vié, F. Laurent, and M. Massot, “A high order moment method for the simulation of polydisperse two-phase flows”, *Comptes Rendus Mecanique*, vol. 341, no. 1-2, pp. 55-64, 2013.
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- [L18] A. Vié, F. Laurent, M. Massot, “Size-velocity correlations in high order moment methods for polydisperse evaporating sprays : modelling and numerical issues”, *Journal of Computational Physics*, vol. 237, pp. 177-210, 2013.
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- [L19] C. Yuan, F. Laurent, R.O. Fox, “An extended quadrature method of moments for population balance equations”, *Journal of Aerosol Science*, vol. 51, pp. 1-23, 2012.

- [L20] M. Duarte, M. Massot, S. Descombes, C. Tenaud, T. Dumont, V. Louvet, F. Laurent, “New resolution strategy for multi-scale reaction waves using time operator splitting, space adaptive multiresolution and dedicated high order implicit/explicit time integrators”, *SIAM Journal on Scientific Computing* vol. 34, no. 1, pp. A76-A104, 2012.
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- [L21] D. Kah, F. Laurent, M. Massot, S. Jay, “A high order moment method simulating evaporation and advection of a polydisperse liquid spray”, *Journal of Computational Physics*, vol. 231, pp. 394-422, 2012.
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- [L22] M. Massot, F. Laurent, D. Kah, S. de Chaisemartin, “A robust moment method for the evaluation of the disappearance rate of evaporating sprays”, *SIAM Journal On Applied Mathematics*, vol. 70, no. 8, pp. 3203-3234, 2010.
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- [L23] D. Kah, F. Laurent, L. Fréret, S. de Chaisemartin, R. O. Fox, J. Reveillon, M. Massot, “Eulerian quadrature-based moment models for dilute polydisperse evaporating sprays”, *Flow, Turbulence and Combustion*, Special Issue dedicated to S. B. Pope, vol. 85, pp. 649-676, 2010.
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- [L27] F. Laurent, “Numerical analysis of eulerian multi-fluid models in the context of kinetic formulations for dilute evaporating sprays”, *ESAIM : Mathematical Modelling and Numerical Analysis* volume 40 (2006), 431-468.
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- [L31] F. Laurent, “Analyse Numérique d’une méthode multi-fluide eulérienne pour la description de sprays qui s’évaporent”, *C. R. Acad. Sci. Paris*, Ser. I 334 (2002) 417-422.
- [L32] F. Laurent, M. Massot, “Multi-fluid Modeling of Laminar Poly-dispersed Spray Flames : Origin, Assumptions and Comparison of the Sectional and Sampling Methods”, *Combustion Theory and Modelling* volume 5, issue 4 (2001), 537-572.

Publications soumises

- [S1] M. Essadki, S. de Chaisemartin, F. Laurent, M. Massot, “High order moment model for polydisperse evaporating sprays towards interfacial geometry description”, *submitted* (2016).
<https://hal.archives-ouvertes.fr/hal-01355608>

Actes de colloques à comité de lecture

- [C1] M. Essadki, S. de Chaisemartin, M. Massot, F. Laurent, A. Larat and S. Jay, “A new high order moment method for polydisperse evaporating sprays dedicated to the coupling with separated two-phase flows in automotive engine”, in *Proceedings of the 9th International Conference on Multiphase Flows, ICMF 2016*, Firenze, Italy, 2016, pp. 1-6.
- [C2] V. Dupif, M. Massot, J. Dupays, F. Laurent and C. Le Touze, “On the influence of the numerical strategy on the predictive character of Euler-Euler models for two-phase flow simulations in solid rocket motor instabilities”, in *Proceedings of the 9th International Conference on Multiphase Flows, ICMF 2016*, Firenze, Italy, 2016, pp. 1-6.
- [C3] M. Boileau, J. Lagarde, V. Dupif, F. Laurent and M. Massot, “On the influence of the numerical strategy on the predictive character of Euler-Euler models for two-phase flow simulations in solid rocket motor instabilities”, in *Proceedings of the 9th International Conference on Multiphase Flows, ICMF 2016*, Firenze, Italy, 2016, pp. 1-6.
- [C4] O. Emre, M. Massot, S. de Chaisemartin, S. Jay, and F. Laurent, “Eulerian modeling of polydisperse evaporating spray under realistic internal combustion engine conditions”, in *Proceedings of the 8th International Conference on Multiphase Flows, ICMF 2013*, Jeju, Korea, 2013, pp. 1-15.
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- [C6] D. Kah, M. Massot, Q. H. Tran, S. Jay, and F. Laurent, “A high order moment method with mesh movement for the description of a polydisperse evaporating spray”, in *Proceedings of the 7th International Conference on Multiphase Flows, ICMF 2010*, Tampa - Florida USA, United States, 2010, pp. 1-15.

- [C7] L. Fréret, S. de Chaisemartin, J. Reveillon, F. Laurent and M. Massot, “Eulerian models and three-dimensional numerical simulation of polydisperse sprays”, in *Proceedings of the 7th International Conference on Multiphase Flows, ICMF 2010*, Tampa - Florida USA, United States, 2010, pp. 1-15.
- [C8] M. Boileau, C. Chalons, J.-F. Bourgoïn, C. Terrier, F. Laurent, S. de Chaisemartin, and M. Massot, “Robust numerical schemes for Eulerian spray DNS and LES in two-phase turbulent flows”, in *Proceedings of the 7th International Conference on Multiphase Flows, ICMF 2010*, Tampa, FL, United States, 2010, pp. 1-15.
- [C9] S. de Chaisemartin, L. Fréret, F. Laurent, M. Massot, C. Lacour, A.-L. Birbaud, S. Ducruix and D. Durox, “Pulsated free jets with spray injection : Eulerian multi-fluid modelling and simulation versus experimental measurements”, in *Proceedings of the 6th International Conference on Multiphase Flow, ICMF 2007*, Leipzig, Germany, 2007, pp. 1-15.
- [C10] F. Laurent, M. Massot, R.O. Fox, “Numerical simulation of polydisperse, dense liquid sprays in an Eulerian framework : direct quadrature of moment method and multi-fluid method”, in *Proceedings of the 6th International Conference on Multiphase Flow, ICMF 2007*, Leipzig, Germany, 2007, pp. 1-15.
- [C11] S. de Chaisemartin, F. Laurent, M. Massot and J. Reveillon, “Evaluation of Eulerian Multi-Fluid versus Lagrangian methods for the ejection of polydisperse evaporating sprays by vortices”, in *Proceedings of the 6th International Conference on Multiphase Flow, ICMF 2007*, Leipzig, Germany, 2007, pp. 1-15.
- [C12] M. Massot, F. Laurent and S. de Chaisemartin, “Eulerian multi-fluid method for the numerical simulation of evaporating polydisperse sprays : modelling and numerical issues in multi-dimensionnal configurations”, in *Proceedings of the 6th International Conference on Multiphase Flow, ICMF 2007*, Leipzig, Germany, 2007, pp. 1-15.
- [C13] F. Laurent, M. Massot, “Eulerian multi-fluid modeling of polydisperse evaporating sprays”, in *Proceedings of the 5th International Conference on Multiphase Flow, ICMF 2004*, Yokohama, Japan (2004), paper No. 263.

Chapitres d’ouvrages

- [O1] F. Laurent, A. Vié, C. Chalons, R. O. Fox and M. Massot, “A hierarchy of Eulerian models for trajectory crossing in particle-laden turbulent flows over a wide range of Stokes numbers”, in *Annual Research Brief 2012*, the Center for Turbulence Research - Stanford University (2013) pp 193-204.
- [O2] N. Rimbart, F. Doisneau, F. Laurent, D. Kah and M. Massot, “Two-layer mesoscopic modeling of bag break-up in turbulent secondary atomization”, in *Proceedings of the summer program 2012*, publication of Center for Turbulence Research - Stanford University (2012), pp 335-344.

- [O3] L. Fréret, O. Thomine, F. Laurent, J. Réveillon and M. Massot “Direct Numerical Simulation of polydisperse evaporating sprays in 3D jet configuration using Euler-Euler and Euler-Lagrange formalisms”, in *Proceedings of the summer program 2012*, publication of Center for Turbulence Research - Stanford University (2012), pp 345-354.
- [O4] F. Doisneau, O. Thomine, F. Laurent, A. Vié, J. Dupays and M. Massot, “Eulerian modeling and simulation of small scale trajectory crossing and coalescence for moderate-Stokes-number spray flows”, in *Proceedings of the summer program 2012*, publication of Center for Turbulence Research - Stanford University (2012), pp 365-374.
- [O5] A. Vié, C. Chalons, R. O. Fox, F. Laurent and M. Massot, “A multi-Gaussian quadrature method of moments for simulating high Stokes number turbulent two-phase flows”, in *Annual Research Briefs 2011*, the Center for Turbulence Research - Stanford University (2012) pp 309-320.
- [O6] M. Duarte, M. Massot, S. Descombes, C. Tenaud, T. Dumont, V. Louvet and F. Laurent, “New Resolution Strategy for Multi-scale Reaction Waves using Time Operator Splitting and Space Adaptive Multiresolution : Application to Human Ischemic Stroke”, in *Summer school on multiresolution and adaptive mesh refinement methods*, E. Cancès, V. Louvet, EDP Sciences, (2011) Vol. 34 pp 277-290.
- [O7] M. Boileau, C. Chalons, F. Laurent, S. de Chaisemartin and M. Massot, “Robust numerical schemes for Eulerian spray DNS and LES in two-phase turbulent flows”, in *Proceedings of the summer program 2010*, publication of Center for Turbulence Research - Stanford University (2010), pp 359-370.
- [O8] L. Fréret, O. Thomine, J. Reveillon, S. de Chaisemartin, F. Laurent and M. Massot, “On the role of preferential segregation in flame dynamics in polydisperse evaporating sprays”, in *Proceedings of the summer program 2010*, publication of Center for Turbulence Research - Stanford University (2010), pp 383-392.
- [O9] M. Massot, F. Laurent, S. de Chaisemartin, L. Fréret and D. Kah, “Eulerian multi-fluid models : modeling and numerical methods”, in *Modelling and Computation of Nanoparticles in Fluid Flows*, Lectures of the von Karman Institute, NATO RTO-EN-AVT 169, 2009, pp. 1-86.
- [O10] L. Fréret, F. Laurent, S. de Chaisemartin, D. Kah, R. O. Fox, P. Vedula, J. Reveillon, O. Thomine and M. Massot, “Turbulent combustion of polydisperse evaporating sprays with droplet crossing : Eulerian modeling and validation in the infinite Knudsen limit”, in *Proceedings of the summer program 2008*, publication of Center for Turbulence Research - Stanford University (2008), pp 277-288.
- [O11] S. de Chaisemartin, L. Fréret, D. Kah, F. Laurent, R.O. Fox, J. Reveillon and M. Massot, “Turbulent combustion of polydisperse evaporating sprays with droplet crossing : Eulerian modeling of collision at finite Knudsen and validation”, in *Proceedings of the summer program 2008*, publication of Center for Turbulence Research - Stanford University (2008), pp 265-276.

Rapports et autres

- [R1] M. Boileau, A. Larat, F. Laurent-Nègre, M. Massot, *Une équipe de mathématiques dans un laboratoire d'ingénierie ; ou comment tenter de repousser les limites de l'interaction des mathématiques sans y perdre son identité*, Matapli no 101 (2013), pp 125-138.
- [R2] S. de Chaisemartin, F. Laurent, M. Massot, J. Reveillon, “Evaluation of Eulerian Multi-Fluid versus Lagrangian methods for the ejection of polydisperse evaporating sprays by vortices”, <http://hal.archives-ouvertes.fr/hal-00169721/fr/>
- [R3] F. Laurent, M. Massot, “Propagation of plane polydispersed Spray Flames”, <http://hal.archives-ouvertes.fr/hal-00203439/fr/>