



Thomas Helfer

Liste de publications

Articles de revue

- 2022 **Homogenized constitutive equations for porous single crystals plasticity.**, Cédric Sénac, Jean-Michel Scherer, Jérémy Hure, Thomas Helfer et Benoît Tanguy, *European Journal of Mechanics / A Solids*.
- 2021 **Large-deformation geomechanical problems studied by a shear-transformation-zone model using the material point method.**, Wenlong Li, Ning Guo, Z.X. Yang, et Thomas Helfer., *Computers and Geotechnics.*, [10.1016/j.compgeo.2021.104153](https://doi.org/10.1016/j.compgeo.2021.104153).
- 2020 **Philippe Garcia, Audrey Miard, Thomas Helfer, Jean-Baptiste Parise, Xavière Iltis et Guy Antou**, *The effect of oxygen partial pressure on dislocation creep in polycrystalline uranium dioxide*, *Journal of the European Ceramic Society.*, [10.1016/j.jeurceramsoc.2020.09.005](https://doi.org/10.1016/j.jeurceramsoc.2020.09.005).
- 2020 **The MFrontGenericInterfaceSupport project**, *Journal of Open Source Software*, Thomas Helfer, Jérémy Bleyer, Tero Frondelius, Ivan Yashchuk, Thomas Nagel and Dmitri Naumov.
- 2020 **An efficient and robust staggered algorithm applied to the quasi-static description of brittle fracture by a phase-field approach**, Ye Lu, Thomas Helfer and Olivier Fandeur, *Computer Methods in Applied Mechanics and Engineering*.
- 2019 **Description and thermal simulation of the DIAMINO irradiation experiment of transmutation fuel in the OSIRIS reactor**, Syriac Bejaoui, Thomas Helfer, Stéphane Bendotti and Thierry Lambert, *Progress in Nuclear Energy*.
- 2018 **Crystal viscoplastic modeling of UO₂ single crystal**, Luc Portelette, Jonathan Amodeo, Ronan Madec, Julian Soulacroix, Thomas Helfer and Bruno Michel, *Journal of Nuclear Materials*.
- 2018 **Simulation of reactivity-initiated accident transients on UO₂-M5® fuel rods with ALCYONE V1.4 fuel performance code**, Isabelle Guénot-Delahaie, Jérôme Sercombe, Patric Goldbronn, , Eric Federici, Thomas Le Jolu, Aurore Parrot, Christine Delafoy, and Christian Bernaudat , *Nuclear Engineering and Technology.*, [10.1016/j.net.2017.12.006](https://doi.org/10.1016/j.net.2017.12.006).
- 2017 **Analytical and 3D numerical analysis of the thermoviscoelastic behavior of concrete-like materials including interfaces**, Benoît Bary, Christophe Bourcier and Thomas Helfer, *Advances in Engineering Software*.

- 2016 **3D Continuum Damage Approach for Simulation of Crack Initiation and Growth in Ceramic Materials.**, Bruno Michel, Thomas Helfer, Isabelle Ramière et Coralie Esnoul., Key Engineering Materials., [10.4028/www.scientific.net/KEM.713.155](https://doi.org/10.4028/www.scientific.net/KEM.713.155).
- 2016 **A new numerical methodology for simulation of unstable rupture in fragile materials**, Bruno Michel, Thomas Helfer, Isabelle Ramière, and Coralie Esnoul, Engineering Fracture Mechanics.
- 2016 **2D simulation of hydride blister cracking during a RIA transient with the fuel code ALCYONE**, Jérôme Sercombe, Thomas Helfer, Eric Federici, David Leboulch, Thomas Le Jolu, Arthur Hellouin de Ménibus, and Christian Bernaudat, EPJ Nuclear Sciences & Technologies, 2 :22, 2016.
- 2016 **Thermoviscoelastic Analysis of Concrete Creep at Mesoscale**, Benoit Bary, Christophe Bourcier, and Thomas Helfer, Key Engineering Materials, 711 :652–658, September 2016.
- 2015 **Iterative residual-based vector methods to accelerate fixed point iterations**, Isabelle Ramière, Thomas Helfer, Computers & Mathematics with Applications, Volume 70, Issue 9, November 2015, Pages 2210-2226.
- 2015 **Introducing the open-source mfront code generator : Application to mechanical behaviours and material knowledge management within the PLEIADES fuel element modelling platform**, Thomas Helfer, Bruno Michel, Jean-Michel Proix, Maxime Salvo, Jérôme Sercombe, Michel Casella, Computers & Mathematics with Applications, Volume 70, Issue 5, September 2015, Pages 994-1023.
- 2015 **Extension of monodimensional fuel performance codes to finite strain analysis using a lagrangian logarithmic strain framework**, Thomas Helfer, Nuclear Engineering And Design, Volume 288, July 2015, Pages 75-81.
- 2015 **Licos, a fuel performance code for innovative fuel elements or experimental devices design.**, Thomas Helfer, Syriac Bejaoui et Bruno Michel., Nuclear Engineering and Design, [10.1016/j.nucengdes.2015.07.070](https://doi.org/10.1016/j.nucengdes.2015.07.070).
- 2015 **Current status in PLEIADES fuel performance codes of cracks and damage modelling**, Thomas Helfer, Bruno Michel, Jérôme Sercombe, International Conference on Computational Modeling of Fracture and Failure of Materials and Structures, Paris.
- 2015 **Experimental characterization and modeling of UO₂ grain boundary cracking at high temperatures and high strain rates**, Maxime Salvo, Jérôme Sercombe, Thomas Helfer, Philippe Sornay, Thierry Désoyer, Journal of Nuclear Materials, Volume 460, May 2015, Pages 184-199.
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- 2013 **Stress concentration during pellet cladding interaction : Comparison of closed-form solutions with 2D (r, θ) finite element simulations**, Jérôme Sercombe, Renaud Masson, Thomas Helfer, Nuclear Engineering and Design, Volume 260, July 2013.

Chapitres de livre

- 2021 **Two fuel performance codes of the PLEIADES platform : ALCYONE and GERMINAL.**, Bruno Michel, Isabelle Ramière, I. Vaillard, Clément Introïni, Marc Lainet, Nathalie Chauvin, Vincent Marelle, Antoine Bouloré, Thomas Helfer, Renaud Masson, Jérôme Sercombe, Jean-Christophe Dumas, Laurence Noirot, Stéphane Bernaud., Nuclear Power Plant Design and Analysis Codes ., [10.1016/B978-0-12-818190-4.00009-7](https://doi.org/10.1016/B978-0-12-818190-4.00009-7).

Participation à congrès

- 2022 **Analysing the compaction of crushed salt in repositories for high-level waste in salt formations using a dedicated constitutive model.**, Éric Simo, Thomas Nagel, Christian Lerch, Paola Léon Vargas and Thomas Helfer., EGU22 meeting., Vienne..
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- 2022 **Modélisation de l'amorçage et de la propagation de l'endommagement d'un milieu hétérogène de type matrice – inclusions soumis à des dilata-tions différentielles**, Vincent Gauthier, Mihail Garajeu, Bruno Michel, Thomas Helfer et Renaud Masson., 25ème Congrès Français de Mécanique.
- 2022 **Premières démonstrations d'une proto-application HPC en mécanique non linéaire implicite**, Guillaume Latu et Thomas Helfer, 25ème Congrès Français de Mécanique.
- 2022 **Simulation du comportement sous irradiation des gaines en alliage de zirconium.**, Cécilia Gicquel, Fabien Onimus, Renald Brenner, Thomas Helfer et Renaud Masson., 25ème Congrès Français de Mécanique.
- 2022 **Micromorphic damage behaviours for quasi-brittle materials : a numerical implementation and link with phase-field approach to fracture.**, David Siedel Olivier Fandeur, Thomas Helfer, Jacques Besson, Samuel Forest, Kaïs Ammar, 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS)., Oslo..
Norway
- 2022 **Polycrystalline simulations of in-reactor deformation of Zircaloy-4 cladding tubes during nominal operating conditions**, Cécilia Gicquel, Fabien Onimus, Renald Brenner, Thomas Helfer et Renaud Masson, Zirconium in the Nuclear Industry.
- 2022 **A gradient damage approach using the Hybrid High Order method**, David Siedel Olivier Fandeur, Thomas Helfer, Jacques Besson, Samuel Forest, Kaïs Ammar, 15th World Congress on Computational Mechanics (WCCM-XV) and 8th Asian Pacific Congress on Computational Mechanics (APCOM-VIII), Yokohama, Japan..
- 2022 **Data-Driven Simulations for Panel Paintings : modelling the experimental results.**, Lorenzo Riparbelli, Luca Uzielli, Paola Mazzanti, Ioannis Christovasilis, Thomas Helfer et Marco Fioravanti., 15th World Congress on Computational Mechanics (WCCM-XV) and 8th Asian Pacific Congress on Computational Mechanics (APCOM-VIII), Yokohama, Japan..

- 2022 **Semi-supervised deep learning of constitutive relations.**, *Marius Duvillard, Loïc Giralaldi et Thomas Helfer.*, 15th World Congress on Computational Mechanics (WCCM-XV) and 8th Asian Pacific Congress on Computational Mechanics (APCOM-VIII), Yokohama, Japan..
- 2022 **Schéma de résolution locale pour la méthode Hybrid High Order et application en mécanique non-linéaire**, *David Siedel, Thomas Helfer, Olivier Fandeur, Jacques Besson, Samuel Forest, Kaïs Ammar*, 15ème Colloque National en Calcul des Structures, Giens, France..
- 2022 **Implicit integration of the constitutive equations of a polycrystal obtained by the Berveiller-Zaoui homogenization scheme.**, *Thomas Helfer, Cécilia Gicquel, Fabien Onimus et Renaud Masson.*, 15ème Colloque National en Calcul des Structures, Giens, France..
- 2022 **New functionalities of Versions 3.3, 3.4 and 4.0 of the TFEL/MFront project.**, *Thomas Helfer, Jérémy Hure, Mohamed Shokeir, Olivier Fandeur, Olivier Jamond, Jean-Philippe Mathieu, Simon Raude, Dominique Geoffroy, Jérémy Bleyer, Thomas Nagel et Guillaume Latu.*, 15ème Colloque National en Calcul des Structures, Giens, France..
- 2022 **MANTA : un code HPC généraliste pour la simulation de problèmes complexes en mécanique.**, *Olivier Jamond, Nicolas Lelong, Axel Fourmont, Joffrey Bluthé, Matthieu Breuze, Pascal Bouda, Guillaume Brooking, Florence Drui, Alexandre Epalle, Olivier Fandeur, Gauthier Folzan, Thomas Helfer, Francis Kloss, Guillaume Latu, Antoine Motte, Christopher Nahed, Adrien Picard, Raphaël Prat, Isabelle Ramière, Morgane Steins et Benoît Prabel.*, 15ème Colloque National en Calcul des Structures, Giens, France..
- 2022 **Flexible integration of constitutive models into simulators for non-isothermal two-phase flow in deformable porous and fractured media.**, *Thomas Nagel, Thomas Helfer, Michael Pitz, Dmitri Naumov, Norbert Grunwald, Sonja Kaiser, Keita Yoshioka, Olaf Kolditz.*, 11th European Solid Mechanics Conference, Irlande.
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- 2021 **Porous Crystal Plasticity-based Ductile Fracture assessment for FCC Nuclear materials.**, *Cédric Sénac, Jérémy Hure, Jean-Michel Scherer, Thomas Helfer et Benoît Tanguy.*, European Nuclear Young Generation..
- 2021 **MFront : an open-source code generator for complex constitutive laws**, *Thomas Helfer, Gentien Marois, Jérémy Bleyer*, 14th World Congress on Computational Mechanics.
- 2021 **mgis.fenics Part II : Cosserat media in small deformation with mgis.fenics.**, *Tamara Dancheva, Unai Alonso, Michael Barton, Jérémy Bleyer, Thomas Helfer, Raffaele Russo.*, FEniCS 2021., https://www.researchgate.net/publication/350811403_mgisfenics_Part_II_Cosserat_media_in_small_deformation_with_mgisfenics.

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- 2019 **Une implémentation numérique efficace pour le traitement de la fissuration fragile par champ de phase : application aux combustibles nucléaires**, *Ye Lu, Thomas Helfer, Olivier Fandeur, Benoît Bary.*, Congrès Français de Mécanique.
- 2019 **Comparison of different implicit integration procedures for an elasto-viscoplastic model.**, *International Conference on Material Modelling (ICCM), Stockholm*, *Agathe Forre, Thomas Helfer et Khoulood Derouiche*, <https://indico.lunarc.lu.se/event/1/contributions/125/>.

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- 2016 **Using Anderson Algorithm to accelerate FFT Based methods.**, *Étienne Castelier, Lionel Gélébart et Thomas Helfer.*, ECCOMAS.
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- 2015 **Recent improvements of the fuel thermomechanical modelling in the PLEIADES Platform to better simulate accidental transients conditions using the Alcyone fuel performance code.**, Thomas Helfer, Jérôme Sercombe, Bruno Michel, Isabelle Ramière, Maxime Salvo, Olivier Fandeur, Patrick Goldbronn, Vincent Marelle, Éric Fédérici., NuFuel & MMSNF 2015, Karlsruhe, Germany..
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Rapport techniques publiques

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Docteur en mécanique non linéaire des solides.

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- 2020 **Assisted computation of the consistent tangent operator of behaviours integrated using an implicit scheme.** Theory and implementation in MFront., *Thomas Helfer.*, Documentation du projet MFront., https://www.researchgate.net/publication/342721072_Assisted_computation_of_the_consistent_tangent_operator_of_behaviours_integrated_using_an_implicit_scheme_Theory_and_implementation_in_MFront.
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