

# Thomas Elguedj

Full Professor of Mechanical Engineering

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## Education and positions

- 2017–today **Full Professor**, INSA-Lyon, Mechanical Engineering.  
Mechanical Engineering Department and Lamcos lab.
- 2008–2017 **Associate Professor (HDR since 2014)**, INSA-Lyon, Mechanical Engineering.  
Mechanical Engineering and Preparatory Level Departments and Lamcos lab.
- 2007–2008 **Post-Doctoral student**, LaMCoS, INSA-Lyon.
- 2006–2007 **Post-Doctoral student**, ICES, University of Texas at Austin, USA.
- 2003–2006 **PhD thesis in Mechanics**, INSA-Lyon, DGA fellowship.
- 1999–2003 **MS in Mechanical Engineering**, ENS Cachan, including Agrégation in Mechanics.

## Research

- Topics** Innovative numerical methods (X-FEM, SPH, IGA, PGD) in mechanics applied to various problems in engineering: fracture under extreme loading, integration of geometry and simulation, advanced manufacturing processes (cold spray, cavitation peening, additive manufacturing)...
- Students** Supervision or co-supervision of 13 PhD thesis (5 ongoing), 15 master thesis, 3 postdocs (1 ongoing), 4 research engineers (1 ongoing).
- Publications** 30 papers in international peer-reviewed journal, more than 70 international conference papers, 15 invited seminars.
- Collaborations** Past and ongoing scientific collaborations with UT Austin, KAUST, Tohoku University, Stuttgart University, INSA-Toulouse, ISAE-Supaero, INP Grenoble.  
Several public and private grants (with industry, 700k€ in the past 10 years): Airbus, Safran, Naval Group, EDF, Framatome, CEA, Ansys, Altair.

## Responsibilities

- INSA-Lyon** Elected member, Scientific Council of INSA-Lyon (2010-2014).  
Head of the *manufacturing process* teaching group, Mechanical Engineering department  
From sept. 2019, deputy dean of the Mechanical Engineering department, in charge of academic affairs  
From march. 2020, head of Mimesis research group at Lamcos
- Research** Board member, *Computational Structural Mechanics Association*, deputy secretary.  
Leader of the *materials and advanced manufacturing processes* work group, CNRS Inge'LySE federation.  
Leader of the *numerical simulation* workgroup, additive manufacturing topic, Industry of the Futur Alliance.
- Congress** Member of the scientific board of several international congresses: World Congress on Computational Mechanics 2020, CSMA2019, IGA2019, IGA2018, ICOMP2018, IGA2017, CSMA2017, IGA-MF 2016, XFEM2013.  
Chairman of the 9th International Conference on Isogeometric Analysis IGA2021.

## 5 Significant Papers

- [ACL1] Thomas Elguedj, Romain Pelé de Saint Maurice, Alain Combescure, Vincent Faucher, and Benoit Prabel. Extended finite element modeling of 3d dynamic crack growth under impact loading. *Finite Element in Analysis and Design*, 151:1–17, 2018.
- [ACL2] Robin Bouclier, Thomas Elguedj, and Alain Combescure. An isogeometric locking-free NURBS-based solid-shell element for geometric nonlinear analysis. *International Journal for Numerical Methods in Engineering*, 101(10):774–808, 2014.
- [ACL3] Thomas Elguedj and Thomas J.R. Hughes. Isogeometric analysis of nearly incompressible large strain plasticity. *Computer Methods in Applied Mechanics and Engineering*, 268(1):388–416, 2014.
- [ACL4] David Haboussa, David Grégoire, Thomas Elguedj, Hubert Maigre, and Alain Combescure. X-FEM analysis of the effects of holes or other cracks on dynamic crack propagations. *International Journal for Numerical Methods in Engineering*, 86(4-5):618–636, 2011.
- [ACL5] Thomas Elguedj, Yuri Bazilevs, Victor M. Calo, and Thomas J.R. Hughes. B-bar and F-bar projection methods for nearly incompressible linear and non-linear elasticity and plasticity using higher-order NURBS elements. *Computer Methods in Applied Mechanics and Engineering*, 197:2732–2762, 2008.