Luca Di Stasio

Early Stage Researcher

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Research Interests

- **Linear and non-linear behavior of materials and structures:** elasticity, fracture, plasticity, viscoelasticity, viscoplasticity, piezoelectricity, magnetostriction
- **Multi-scale computational modeling of materials:** Finite Element Method (FEM) and its variants, Lattice Boltzmann Method (LBM), Molecular Dynamics (MD), Discrete Element Method (DEM)
- **Modeling of fatigue, fracture, and damage in polymers and FRPC:** delamination, transverse cracking, fiber-matrix debonding, transverse cracking induced delamination
- **Experimental mechanics of FRPC:** mode I, II, III and mixed mode I-II delamination, automated observation of transverse cracks, estimation of stiffness reduction, loading rate effects, effect of curing history and degree of cure on mechanical properties
- **Theoretical, experimental and computational fracture mechanics:** interface cracks, Fracture Mechanics, Virtual Crack Closure Technique (VCCT), J-integral, Cohesive Zone Model (CZM), eXtended Finite Element Method (X-FEM)
- **Adoption and dissemination of Open Science practices:** open innovation, research data management, research software development and maintenance, open data, open source software
- **Learner-centered pedagogy and teaching in higher education:** signature pedagogies, threshold concepts, taxonomies, learning objectives, physical and virtual learning spaces

Research Area and Approach

My main research interest lies in Integrated Computational Materials Engineering with a particular focus on Fiber-Reinforced Polymer Composite (FRPC) materials, with both man-made (carbon fibers, glass fibers, epoxy) and bio-sourced constituents (wood, wood-based products, cellulose, natural fibers).

Current and Past Research

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Future Research Directions

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