

**Guglielmo Scovazzi, Professor of Civil & Environmental Engineering, Mathematics,
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Vision Statement

Over the years, EMI has developed as an outstanding organization promoting multidisciplinary research. Its activities have grown tremendously from the early conferences until now: nothing short of impressive. Through its initiatives and conferences, EMI has created a very fertile basis for scientific discovery and collaboration. Looking ahead, one research area that is prominently emerging is represented by Digital Twins, data-driven models that attempt to replicate/predict the behavior of physical/mechanical systems over their lifespan. A Digital Twin is a very broad concept, and can apply to macroscopic structural modeling/simulation, microstructural material characterization, as well as mesoscale/architected/meta-material design. If elected to the EMI Board of Governors, I would like to steer more investments and activity in this broad area, which perfectly lies at the intersection between theoretical, experimental, and computational mechanics, that is, at the soul and core of EMI. Digital Twins still pose many challenges: they not only require advances in AI algorithms, but the entire modeling/experimental/computational infrastructure needs to be adjusted, for data to be acquired seamlessly and automatically. My prior experiences and connections with the US National Laboratories could be valuable in this arena, to which the Federal Government has openly and broadly committed. Because of the composition and excellence of its members, EMI is poised to become the premiere organization where Digital Twins for mechanics are envisioned, designed, and developed.

Short Bio

Guglielmo Scovazzi is Professor of Civil & Environmental Engineering, Mathematics, and Mechanical Engineering & Materials Science at Duke University. His interests are in the general area of computational mechanics, and specifically in computational solid mechanics, CFD, fluid/structure interaction, computational geomechanics, flow through porous media.

He earned B.S./M.S. Degrees in Aerospace Engineering at Politecnico di Torino in 1998. He received a M.S. in 2001 and a Ph.D. in 2004, both from the Mechanical Engineering Department at Stanford University. Between 2004 and 2012, he held a position as Senior Member of the Technical Staff at Sandia National Laboratories, Albuquerque (New Mexico).

Guglielmo Scovazzi is a recipient of the 2014 Early Career Award from the Office of Science of the US Department of Energy (ASCR program), and the 2017 Presidential Early Career Award for Scientists and Engineers (PECASE). In February 2018, he was named Kavli Fellow by the National Academy of Sciences and the Kavli Foundation. The Kavli Fellowship acknowledges contributions of U.S. scientists under the age of 45. He is also a Distinguished Adjunct Professor at POSTECH (Pohang University of Science and Technology, South Korea).

He is an associate editor of the "Journal of Computational Physics" (Elsevier) and "Computational Geosciences" (Springer) and in the editorial board of "Computer Methods in Applied Mechanics and Engineering" journal (Elsevier), the "International Journal on Numerical Methods for Fluids," (Wiley) the "Engineering with Computers" journal (Springer), and the "Advances in Computational Science and Engineering" journal (American Institute of Mathematical Sciences). He is a member of EMI, ASCE, SIAM, USACM, and IACM.
