

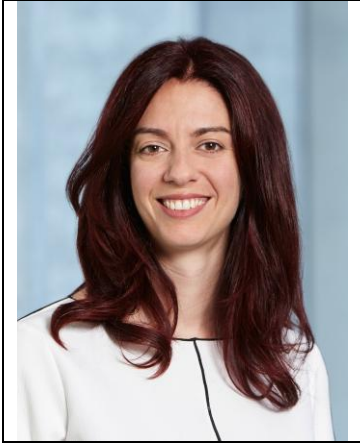


ARTISTE2025

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Keynote Speaker Bio



Eleni Chatzi

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Eleni Chatzi is a Full Professor and Chair of Structural Mechanics and Monitoring at the Institute of Structural Engineering of the Department of Civil, Environmental and Geomatic Engineering of ETH Zürich. She currently serves as the President of the European Academy of Wind Energy (EAWE). Her research interests include the fields of Structural Health Monitoring (SHM), hybrid modelling for digital twinning, and data-driven decision support for engineered systems. Her work in the domain of self-aware infrastructure was recognized with a 2016 ERC Starting Grant award, the 2020 ASCE Huber Research prize, the 2020 EASD Junior Research Prize in the area of Computational Structural Dynamics, and the 2024 SHM Person of the Year award.

Keynote Lecture Title:

A Physics-Enhanced Approach to Modelling and Monitoring Dynamics

Abstract

Modern engineering systems face complex, nonlinear, and dynamic conditions that challenge traditional modeling and monitoring approaches. While advances in sensing technologies have enabled detailed data collection, these datasets are often sparse, noisy, and distorted by environmental and operational factors. As a result, purely data-driven methods often struggle to effectively capture system behavior. This talk presents a physics-enhanced digital twin framework that combines physics-based understanding - particularly of system dynamics - with advanced data assimilation techniques. By integrating domain knowledge with observational data, these augmented twins provide interpretable, robust, and scalable solutions for system management. Such a hybrid approach overcomes key limitations of traditional methods and supports improved decision-making for complex, real-world systems. The presentation underscores how embedding physical principles into digital models enables more resilient, aware and responsive engineering infrastructure.