



# WORKSHOP

# **COSENO**

# October 3–4, 2025 Hotel Monte Bondone, Via dei Falchi, 19, Vaneze (TN)

## Scientific scope:

The workshop will explore recent breakthroughs in the understanding of complex systems, where interactions among components give rise to emergent phenomena with wide-ranging implications - from materials science and artificial intelligence to life sciences and beyond.

Key themes will include:

- Theoretical Advances: Statistical mechanics of spin glasses (classical and quantum), disordered systems, many-body phases, nonlinear and quantum chaos, and pattern formation in biological/social networks.

- Experimental Frontiers: Optical spectroscopy, advanced microscopy, and large-scale studies of wave propagation in disordered media, neuromorphic computing, and hybrid biological/artificial systems.

- AI & Data-Driven Discovery: Machine learning methods to model complex data, predict emergent behaviors, and optimize nextgeneration technologies.

### Who should attend?

We welcome:

- Researchers and students in fundamental or applied physics of complex systems

- Scholars working across disciplines including nanotechnology, biophysics, AI, and materials science

- Anyone exploring emerging technologies with scientific or industrial applications

### **Scientific Committee**

Gianluca Lattanzi

### **Organising Committee**

Gianluca Lattanzi

Lorenzo Pavesi