



PHYSICS COLLOQUIUM

Speaker:

Prof. Elena Gati

Max-Planck-Institute for Chemical Physics of Solids, and
TU Dresden,
Dresden



Topic:

**Probing and tuning emergent orders in quantum materials
through stress and strain**

Inaugural lecture

*Time and
place:*

Tuesday, January 21, 2025, **2:50 pm** – hybrid event

The colloquium will be held in REC/C213.

Online participation possible:

Zoom-Meeting: Meeting-ID: 631 3817 8900 / passcode: PC-WiSe24

<https://tu-dresden.zoom-x.de/j/63138178900?pwd=E3ujrdyvlnABCPexxEhG5XErr7Cv5B.1>

Host:

Dean of the Faculty of Physics Prof. Gesche Pospiech

Abstract:

Quantum materials are a fascinating class of materials because they showcase the collective behavior of a large number of interacting quantum objects in a controlled laboratory environment. These materials also offer the potential for breakthrough technological innovations that could transform modern technology. However, due to the inherent complexity of real materials, a key challenge in the field is to understand how different orders with potential functionality emerge and how these states can be effectively probed and controlled.

In this talk, I will present how we uncover some of the "hidden secrets" of quantum materials through the application of high stresses and strains. Using frustrated and topological magnetic systems as examples, I will show how bespoke experimental setups allow us to access regions of phase space that remain inaccessible by conventional chemical tuning approaches. These elastic tuning experiments not only provide valuable benchmarks for theoretical models, but also promise to address fundamental questions in the field. In particular, I will highlight how this research benefits from the collaborative environment in Dresden.

Bio:

Elena Gati earned her PhD in experimental condensed matter physics from Goethe University Frankfurt in 2017. She then worked as a Postdoctoral Research Associate at the Ames National Laboratory in the United States. Since 2021, she has been a group leader at the Max Planck Institute for Chemical Physics of Solids in Dresden. In 2023, she was promoted to W2 Group Leader and appointed Honorary Professor at the Technical University of Dresden. Her research focuses on exploring and manipulating quantum materials through the application of large strains and stresses.

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