



UNIVERSITÄT  
LEIPZIG

Fakultät für Physik und Geowissenschaften

Prof. Dr. J. Deiglmayr  
Prof. Dr. I. Sodemann

# Physics Colloquium

Tuesday, 19 Dec 2023 at 16:30

**Prof. Dr. Leticia F. Cugliandolo**

Sorbonne Université, Paris, France

## Phases and topological defects in passive and active systems in two dimensions



Long-range translational order is forbidden in low dimensional systems with short-range interactions: solid phases can only have quasi long-range translational order while they keep long-range orientational order. The standard picture is that the melting transition occurs in two steps: an intermediate phase with quasi long-range orientational order is reached by the unbinding of dislocations while the transition to the liquid is triggered by the unbinding of disclinations.

In this talk I, will revisit all these issues and I will extend their analysis to systems of self-propelled particles, the constituents of active matter, a new kind of soft matter relevant to describe numerous biological problems. The dynamics across various phase transitions will also be discussed. A new scenario emerges from extensive molecular simulations studies.

Joint Colloquium with **CompPhys23**, Leipzig, 19–21 December 2023

Venue: Universität Leipzig, Faculty of Physics and Earth Sciences  
04103 Leipzig, Linnéstraße 5, **Lecture Hall for Theoretical Physics**

Before the lecture, coffee and cookies are offered in the Aula

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