

# Symposium Geometry, Topology, and Condensed Matter (SYGT)

jointly organized by  
 the Magnetism Division (MA),  
 the Thin Films Division (DS),  
 the Low Temperature Physics Division (TT),  
 the Dynamics and Statistical Physics Division (DY), and  
 the Semiconductor Physics Division (HL)

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Extending two-dimensional structures into the three-dimensional (3D) space has become a general trend in multiple disciplines, including electronics, photonics, plasmonics and magnetics. This approach provides means to modify conventional or to launch novel functionalities by tailoring curvature and 3D shape. Shape deformations – which result in a non-uniform curvature – give rise to complex 3D spin textures unveiling the way to get an all-electrical and all-geometrical control of the electron spin orientation, anticipating an unbound potential for new concepts in spin-orbitronics, where the electron spin and the electronic transport are directly controlled by the system geometry. The Symposium will cover broad range of disciplines in condensed matter, namely semiconductors, superconductors, magnetism. Furthermore, we deliberately bring the topic of nematic liquid crystal shells with the aim to reveal similarities and differences in the fundamental properties of soft matter and condensed matter systems.

## Overview of Invited Talks and Sessions

(Lecture hall H1)

### Invited Talks

|          |     |             |    |  |
|----------|-----|-------------|----|--|
| SYGT 1.1 | Tue | 9:30–10:00  | H1 | <b>Thermal Properties of Vortices on Curved Surfaces</b> — LEOPOLDO R. GÓMEZ, NICOLÁS A. GARCÍA, DANIEL A. VEGA, •JOSÉ LORENZANA |
| SYGT 1.2 | Tue | 10:00–10:30 | H1 | <b>Curvature-induced effects in manomagnets</b> — •DENIS SHEKA   |
| SYGT 1.3 | Tue | 10:30–11:00 | H1 | <b>Magnetization configurations and reversal of individual ferromagnetic nanotubes</b> — •MARTINO POGGIO                         |
| SYGT 1.4 | Tue | 11:15–11:45 | H1 | <b>An experimental perspective on topology and nanoelectronics in graphene and related 2D materials.</b> — •IVAN J. VERA-MARUN   |
| SYGT 1.5 | Tue | 11:45–12:15 | H1 | <b>Roles of the curvature in two-dimensional nematic films</b> — •GAETANO NAPOLI, LUIGI VERGORI                                  |

### Sessions

|              |     |            |    |   |
|--------------|-----|------------|----|---|
| SYGT 1.1–1.5 | Tue | 9:30–12:15 | H1 | <b>Geometry, topology, and condensed matter</b> |
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