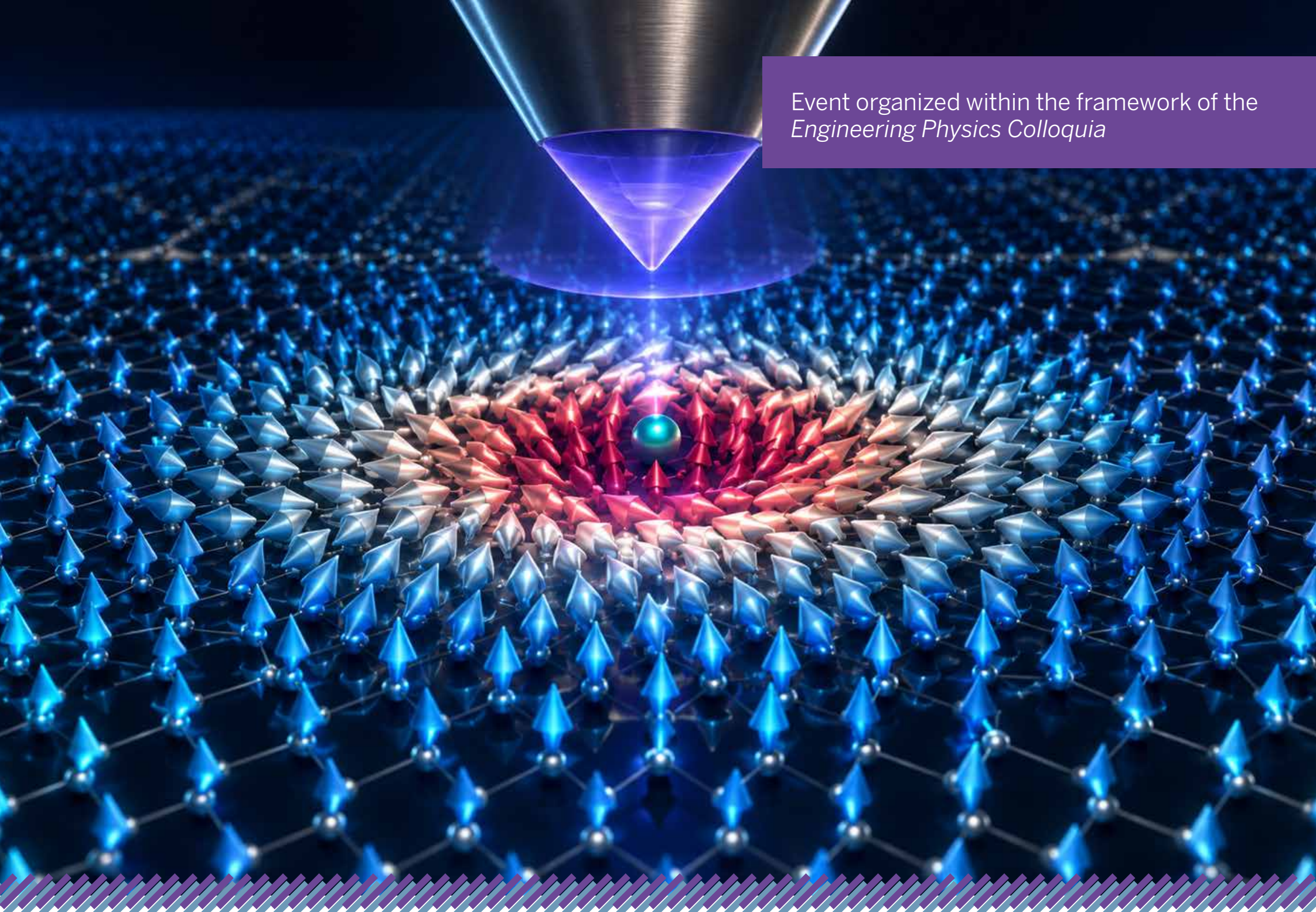




Event organized within the framework of the
Engineering Physics Colloquia



Ca' Foscari
University
of Venice
Department of
Molecular Sciences
and Nanosystems

Prof. **Samir Lounis**
Martin Luther University Halle-Wittenberg
(Germany)

Spin-orbitronics across dimensions

6th October 2026, 11:00 am
Conference Room Orio Zanetto, Alfa Building

The seminar will also be
accessible remotely via the
following link: [https://unive.
zoom.us/j/86011220620](https://unive.zoom.us/j/86011220620)
Password: seminar1

Organized by
Domenico De Fazio
Andrea Droghetti

Spin, charge, and orbital interactions, enriched by topology and chirality, generate diverse phenomena central to spin-orbitronics, which is a dynamic field giving rise to a wealth of intriguing phenomena while targeting faster, denser, and more energy-efficient information technologies. Realizing this potential requires a microscopic, materials-specific understanding of nanoscale magnetic textures. In this talk, I will present new magnetotransport effects associated with complex magnetic textures, including ferromagnetic and antiferromagnetic

skyrmions, which enable their detection via various experimental techniques. I will also discuss proximity effects in van der Waals heterostructures enabling the creation and all-electric switching of non-trivial magnetic states, such as a new class of magnetically frustrated solitons. Finally, I will introduce kagomerization: the formation of a two-dimensional kagome lattice in transition-metal monolayers induced by hexagonal boron nitride, which strongly reshapes magnetism, gives rise to spin-glass-like states, and stabilizes topological solitons.