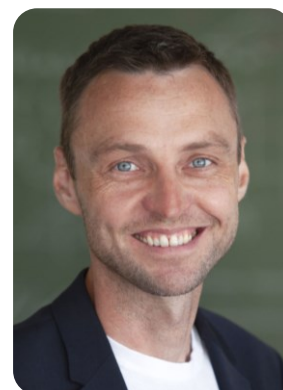


SFB – Colloquium

Speaker: **Prof. Dr. Thomas Frederiksen**Donostia International Physics Center (DIPC),
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Date: Tuesday, 29 November 2022, 14:15, H34

Topic: Spin physics in graphene nanostructures

Abstract:

Atomic-scale control over size, shape, and composition of graphene nanostructures has become a reality through on-surface synthesis whereby suitably designed precursor molecules are assembled and reacted on a metal substrate under vacuum conditions. This has led to the realization of fascinating open-shell nanographenes and nanoribbons with interesting topological, magnetic, and electron transport properties [1].

In this colloquium I will provide an overview of the emerging field of π -magnetism in graphene-based nanostructures and discuss our theoretical contributions to understand scanning tunneling microscopy (STM) experiments on different systems [2-7]. The emergence of localized electron spins in such structures appears promising for applications in quantum technologies, provided that the interaction between them as well as with their environment can be controlled. Finally, I will also discuss electron and spin transport in multi-terminal devices composed of crossed graphene nanoribbons [8] and the proposal to operate them as spinpolarizing electron beam splitters.

[1] J. Phys. Condens. Matter **34**, 443001 (2022).[4,5] Phys. Rev. Lett. **124**, 177201 (2020), **125**, 146801 (2020).[7] Angew. Chem. Int. Ed. **60**, 25224-25229 (2021).[2,3] Nat. Commun. **10**, 200 (2019), **12**, 5538 (2021).[6] Nano Lett. **22**, 164-171 (2022).[8] Phys. Rev. Lett. **129**, 037701 (2022).

Host: Prof. Dr. Andrea Donarini

