Spin transport proximity phenomena in van der Waals heterostructures

Juan F. Sierra[1]
Luis Antonio Benítez[1], Josef Svetlik[1], Williams Savero-Torres[1], Lorenzo Camosi[1], Marius V. Costache[1], Sergio O. Valenzuela[1,2]
1 Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and The Barcelona Institute of Science and Technology (BIST), Campus UAB, Bellaterra, 08193 Barcelona, Spain.
2 Institució Catalana de Recerca i Estudis Avançats (ICREA), 08010 Barcelona, Spain.

juan.sierra@icn2.cat

The vast collection of two-dimensional materials and their co-integration in van der Waals heterostructures enable innovative device engineering. Their atomically thin nature promotes the design of artificial quantum and topological materials by proximity-induced effects with physical properties not readily found in their single material forms [1]. Such a flexible design approach is especially compelling for the development of spintronic devices, which usually harness functionalities from thin layers of magnetic and non-magnetic materials and their interfaces. This talk will summarize recent experimental progress toward investigating proximity-induced phenomena in hybrid graphene-transition metal dichalcogenides systems through spin transport dynamics [2,3] and charge-spin interconversion experiments [4]. Particularly, I will focus on the relevance of crystal symmetries in the emergence of unconventional charge-spin conversion components and anisotropic spin dynamics [5], [6].

References

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