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Graphene Nanoislands on NI(111): Structural and Scattering Properties ARAN GARCIA-LEKUE, Donostia International Physics Center (DIPC), Spain, MARC OLLE, GUSTAVO CEBALLOS, AITOR MUGARZA, Catalan Institute of Nanoscience and Nanotechnology (ICN2), Spain, PIETRO GAMBARDELLA, ETH Zurich, Switzerland, ANDRES ARNAU, DANIEL SANCHEZ-PORTAL, Centro de Fisica de Materiales (CFM), Spain — The graphene-metal interaction can be exploited to engineer hybrid structures with novel electronic and magnetic properties. The graphene-Ni interface is an interesting case where the interaction with the ferromagnetic substrate opens hybridization gaps and induces magnetic moments.We investigate the electronic properties of graphene nanoislands grown on Ni(111),using local tunneling spectroscopy measurements combined with spin-polarized *ab initio* calculations.We show that the electron scattering at the graphene edges is found to be spin- and edge-dependent. This behavior is attributed to the strong distortion of the electronic structure at the interface, which opens a gap and spin-polarizes the Dirac bands of graphene. We also demonstrate that edge scattering is strongly structure dependent, with asymmetries in the reflection amplitude of up to 30% for reconstructed and unreconstructed zig-zag edges.These results suggest a lateral 2D spin filtering for graphene layers, similar to that occurring across the interface.

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