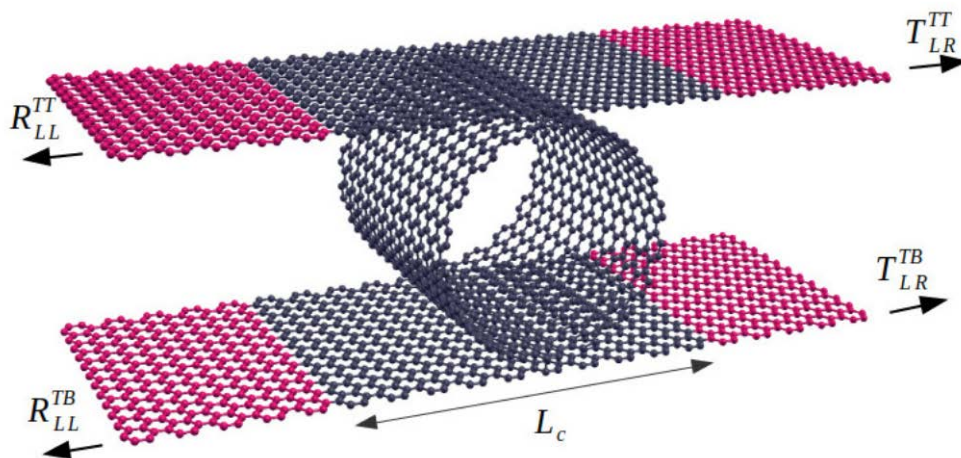


Quantum transport through a carbon nanotube-graphene nanoribbon heterostructure

Prof. Pedro Orellana

Departamento de Física
Universidad Técnica Federico Santa María

Abstract: All-carbon systems have proven to present interesting transport properties and are often used in electronic devices. Motivated by recent resonant responses measured on graphene/fullerene junction, we propose coupled nanoribbons/carbon-nanotube heterostructures for use as charge filters and to allow tuned transport. These hybrid systems are engineered as a four-terminal device, and we explore multiple combinations of source and collector leads. The armchair-edge configuration results in midgap states when the transport is carried through top/bottom terminals. Such states are robust against the lack of perfect order on the tube and are revealed as sharp steps in the characteristic current curves when a bias potential is turned on. The zigzag-edge systems exhibit differential negative resistance, with features determined by the details of the hybrid structures.



Nanomaterials **2022**, *12*, 3475. <https://doi.org/10.3390/nano12193475>

Día: Martes, 19 de Diciembre de 2023

Hora: 13:00 horas

Lugar: Aula IV (Trilingüe)