

Pseudo-Andreev Reflection in Superlattice Graphene
Elizabeth Dresselhaus (Instituut-Lorentz, Leiden University)

This seminar will examine the topological properties of a seemingly simple Hamiltonian that can be generalized to a broad array of physical systems, such as superlattice graphene. I will discuss the low energy theory of superlattice graphene and identify a symmetry that resembles particle-hole symmetry. This will parallel the theory of topological superconductivity but in this case the symmetry is in fact related to the valley degree of freedom. This is the origin of pseudo-Andreev reflection. This finding is key to the valley-switch effect presented in our recent publication (arxiv: 1805.02487). After discussing this effect, I will conclude with ramifications that this finding could have on valleytronics.