



Centre for Doctoral Training in Condensed Matter Physics

CDT-CMP Seminar Series

2:15pm Tuesday 15th November 2016

'Shuttling transport in nanostructures'

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For the last 50 years silicon transistors were undergoing a continual process of scaling downward. This allowed to fabricate smaller and smaller electronic devices and computers. By now the silicon technology has practically reached its limit of miniaturisation, so scientists are looking for new approaches to making nanoscale devices. One of the promising candidates is a single-electron transistor, in which electrical current from one electrode (source) to another (drain) is carried by electrons that tunnel one-by-one via a tiny metal island between the electrodes. It was found that such devices have some drawbacks that could be overcome if the island were able to oscillate between the electrodes. Such devices, which were called 'nanoelectromechanical shuttles', have become a popular topic in nanoelectronics. While the phenomenon of single-electron shuttling was predicted more than 15 years ago, both theoretical and experimental studies of shuttle nanostructures are still carried out. Several new designs were recently suggested that would enable shuttle devices to transfer superconducting Cooper pairs or spin-polarised electrons.

Room 3WN 3.8, University of Bath

If you would like to meet with the speaker before or after the seminar,
please contact cdt-cmp@bristol.ac.uk