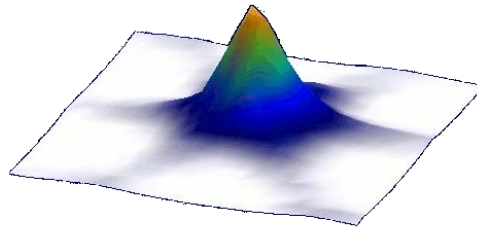


Imaging and manipulation of materials at the nanoscale



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The recent progress in nanotechnology has allowed to visualize and manipulate materials in an extremely accurate way. In this seminar, I will describe the tools I have used during my career in research for this purpose. These are the scanning tunneling microscope (STM) at very low temperatures [1] and the state-of-the-art nanofabrication techniques in clean room environment [2]. In particular, in the the first part of the talk I will explain how to use the STM to visualize superconducting vortices [3, 4] and how to modify this technique to image them under the action of a current flow through the sample [5, 6]. Finally, I will give an overview about nanofabrication of suspended structures using different substrates, as an example of how we can manipulate materials to fabricate nanodevices.

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[6] A. Maldonado et al., *Physical Review B* **88**, 064518 (2013)