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Carbon nanotubes as a playground for quantum physics:
From band structure to splitting Cooper pairs

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I will report recent magneto-transport experiments on single wall carbon nanotubes in pulsed magnetic fields up to 60T. For parallel alignment of the field, the band gap of the tubes can be manipulated. In certain tubes pronounced effects of spin-orbit coupling are observed. In a second set of experiments, we study double quantum dots at very low temperatures. A central superconducting electrodes injects electron pairs into the double dot. We discuss the possibility to extract the two partners of the pairs through different terminals, a process known as non-local Andreev reflection.

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