SPIN TEXTURE OF Mn FILMS ON SUPERCONDUCTING Nb(110)REVEALED BY SP-STM OPERATED AT HIGH MAGNETIC FIELDS AND CRYOGENIC TEMPERATURES IN UHV

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The concept of topological superconductors and their ability to host Majorana fermions sparked recent research in combining magnetic and superconducting materials. In superconductors, point-like magnetic impurities result in Yu-Shiba-Rusinov (YSR) bound states. Engineering of single impurities into chains gives rise to the formation of YSR bands that, in specific cases, are expected to give rise to chiral topological superconductivity that can host Majorana bound states at the ends of these chains. It has been proposed that extending the array of magnetic impurities to 2D would lead to a 1D boundary with a propagating Majorana edge state characterized by a Dirac-like dispersion.

In this presentation, we show the magnetic properties of pseudomorphic single and double atomic layer Mn films grown on Nb(110) studied by spin-polarized scanning tunneling microscopy. The analysis focuses on the spin texture and the spectroscopic in-gap features.