

# **Probing materials by muon spin spectroscopy: from quantum properties to material science**

S.Sanna

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In this seminar I give a general introduction to the muon spin spectroscopy and its relevance in the study of the properties of matter. This technique reveals the interactions of the muon spin by virtue of the asymmetric decay and in particular the muon's magnetic moment is used as a delicate probe of matter. Selected examples of the use of the muon spin spectroscopy to study the quantum properties of matter are presented, especially superconductivity and magnetism. In addition, some examples from the field of material science are considered (e.g. materials for the hydrogen storage and ion mobility in semiconductors).