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Low Energy μSR and Physics at Interfaces

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The physical properties of an interface between two different materials is usually different from the bulk properties of both. Few experimental methods are capable of examining the local properties of such interfaces or near the surface as a function of depth on the nm scale. The low energy muons spin relaxation/rotation (LE-μSR) technique at the Paul Scherrer Institute is perfectly suited for such studies. By implanting fully polarized μ^+ particles at a tunable energy, one can investigate the local magnetic properties in a depth resolved manner in thin films and hetero-structures. In this talk I will discuss some details of the technique and present a few examples from applications in superconductivity, magnetism and dimensional effects at interfaces.