

**On the prospects of probing surface magnons  
using Atomic Beam Spin Echo**

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The Atomic Beam Spin Echo technique is a novel, powerful tool for investigating surface dynamics, including quasi- and inelastic processes. In this atom interferometry method, we combine the exclusive surface sensitivity of thermal atom scattering with the neV resolution of in-beam magnetic resonance techniques. Using <sup>3</sup>He atoms as a non-magnetic probe, we succeeded to resolve time correlations at the surface in the ps through ns range. In a theoretical study we have recently shown that, by using the spin magnetic moment of atomic hydrogen, this method may be applied to the study of fast surface magnetization dynamics including surface magnons. In particular, we show that this method may be used for the determination of surface magnon dispersion curves since they produce a unique signature in the expected spin echo signal. We will present data from first atomic hydrogen spin echo experiments and address its perspectives.

← 13.4 cm →

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9.7 cm