

A $g-2$ experiment with the PSI high quality muon beam in development

Tuesday 10 September 2013 18:00 (3 hours)

As presented in another contribution to this workshop an intense low energy positive muon source is being investigated at PSI. With a transverse extension of a few tenths of a mm and an average energy of 1 eV it should provide after acceleration a precisely timed beam with an ultimate intensity near 10^6 muons/sec. Its application to a precise $g-2$ experiment makes use of a novel concept where the beam is injected at around a MeV energy in a very high field solenoid (> 20 T) in such a way that it gets fully erected into a spiraling trajectory that advances along the solenoid axis by only a few cm in a microsecond. Silicon drift detectors placed around an inside the spiral measure the angle of emission of the decay electron relative to the muon direction providing a precise determination of the precession frequency.

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