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muSR with microwave excitation

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A setup for microwave excitation around 4 GHz has been constructed at the Swiss muon source at PSI. Two classes of experiments are shown, where μ SR with such microwave excitation has the potential to obtain new insights. The first example is microwave spectroscopy of muonium centres that are formed after a delay upon muon implantation, which causes dephasing in transverse-field μ SR. The second example is μ SR of a ferromagnet with conical spin texture that is driven into ferromagnetic resonance (FMR). While both FMR and μ SR of such helimagnets are well established, the combined approach could reveal low-frequency MHz dynamics that emerge from the GHz drive via non-linear interactions, such as a recently proposed magnetic Archimedean screw.

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