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$KAgF_3$: Using F–μ–F states to measure magnetic materials

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$KAgF_3$ is an antiferromagnet, consisting of Ag ions in the rare 2+ oxidation state which magnetically order at low temperature [1, 2]. Here we present a detailed μSR study of the compound, showing how measuring high statistics data in the high temperature, non-magnetic phase can be used to obtain information about the muon site. Knowledge of the muon site then guides the analysis of the high time resolution low-temperature data to reveal details of the magnetic ordering, the magnetic structure and the size of the magnetic moments. We also show, for the first time, how the Larmor precession of the perturbed nearest-neighbour fluorine nucleus can be observed with μSR, as this leads to a splitting of the muon precession frequencies allowing one to follow the magnetic order parameter in detail.

References

[1] D. Kurzydłowski et al., *Chem. Commun.*, **49** 6262 (2013).
[2] Z. Mazej et al., *CrystEngComm*, **11** 1702 (2009).

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