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## Magnetism of $V_{1/3}NbS_2$ : insight into an intercalated transition-metal dichalcogenide using $\mu$ SR

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“ $V_{1/3}NbS_2$ , an intercalated transition-metal dichalcogenide, has been investigated previously using a variety of techniques, resulting in different conclusions about its magnetic properties.

We present muon-spin relaxation ( $\mu$ SR) and susceptibility measurements which examine both the static and dynamic magnetic behaviour of  $V_{1/3}NbS_2$ . A transition to long-range magnetic order has been identified at 52.5(2) K and a further magnetic transition around 10 K has been observed in the magnetic dynamics via ZF measurement and also in wTF measurements. Our  $\mu$ SR measurements are supported by density functional theory (DFT) calculations, which allow for the determination of a single muon stopping site that experiences a dipolar field consistent with a previously-suggested double-Q magnetic state.”

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