QUASI-CRITICAL BEHAVIOUR OF NMR AND μSR RELAXATIONS IN YMn_2D_x

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The magnetic and structural properties of YMn_2 are strongly influenced by introduction of hydrogen (deuterium) in the structure, however, it only slightly modifies the noncollinear antiferromagnetic structure of the compound. The temperature dependencies of the NMR relaxation times T_1 and T_2 of deuterium and the zero field relaxation of muons in YMn_2D_x were measured at temperatures above the magnetic ordering temperature T_N. The corresponding relaxation rates are described by the empirical expression $(1 - T_N/T)^{-\eta}$, where the pseudo-critical exponent η increases linearly with deuterium concentration x. To explain this behaviour, the Moriya's theory of spin fluctuations was used. The expressions for NMR and μSR relaxation rates have been calculated. The resultant formulae agree well with the experiment, giving reasonable values of fitting parameters. The results obtained are discussed in terms of spin fluctuation excitation spectrum.

9.7 cm

13.4 cm

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