Anisotropy of the Adiabatic Relaxation Time of Adsorbed ^{3}He Monolayer

K. Matsumoto

Department of Applied Sciences, Muroran Institute of Technology, Muroran, 050-8585, Japan

We investigate the anisotropy of the adiabatic relaxation time T_2' of adsorbed monolayer solid ^{3}He. We calculate T_2' based on the phenomenological Heisenberg Hamiltonian with the nearest-neighbor (J_1) and the next nearest-neighbor (J_2) exchange interactions. Furthermore, the four particle exchange (K) in the two-dimensional triangular plane is also incorporated. To calculate T_2', it is necessary to compute the second and the fourth moments of the resonance line M_2 and M_4. To obtain them, we can use the formulas published in a previous study.[1] In the results, we observe no significant difference between the nearest-neighbor Heisenberg model and the four particle spin interaction models. A comparison of the present results and the experimental data is briefly discussed.

1. K.Matsumoto, Eur. Phys. J. B (2013) 86, 37

Section: LD - Low dimensional and confined systems

Keywords: two-dimensional solid, relaxation time