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Phase Diagram for ^{3}He Films on Boron Nitride: NMR Studies[1]
YIBING TANG, NEIL SULLIVAN, Department of Physics, University of Florida, USA — Recent studies of the thermodynamic properties of ^{3}He films on graphite [1] have revealed the existence of a previously undetected self-bound liquid phase at low density coverages. We report the results of NMR relaxation time studies for ^{3}He adsorbed on hexagonal boron nitride designed to explore the dynamics of the adsorbed ^{3}He atoms in order to identify the phase boundaries as a function of temperature. A steep thermally activated temperature dependence is observed at high temperatures ($T > 2.6$) K, followed by a linear dependence for $0.77 < T < 2.6$ K. The linear dependence is consistent with that expected for thermal diffusion in the self-bound liquid state.

[1] D. Sato, *et al.*, Phys. Rev. Lett. **109**, 235306 (2012).

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