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Tracer jump frequencies on inequivalent Ga sublattices in Ga₇Pd₃: experiment*

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Perturbed angular correlation spectroscopy (PAC) was used to detect diffusive jumps of Cd atoms on inequivalent Ga sublattices in Ga₇Pd₃ via relaxations of the nuclear quadrupole interactions. Nuclear relaxation, which appears as damping of quadrupole interaction signals for probes on the two sublattices, was observed to increase with increasing temperature. The relaxation was fitted using a simplified model of diffusion in which Cd atoms jump on their own sublattices and not between sublattices. Jump frequencies on the two sublattices (inverses of mean residence times) measured at different temperatures were found to be thermally activated with enthalpies of 0.49(2) eV and 0.44(4) eV, respectively, on Ga(3) and Ga(4) sublattices.

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