

Flux-line lattice dynamics in borocarbides superconductors using NMR measurements

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¹¹B Pulsed nuclear magnetic resonance (NMR) measurements have been performed on single crystals of RNi₂B₂C (R=Y, Lu) superconductors to investigate the flux-line structure and dynamical behavior. Spectrum, linewidth and transverse relaxation rate of ¹¹B NMR are measured down to 3.8K in a field range of 1- 8T. With lowering temperature below T_c, ¹¹B NMR spectrum, shift, linewidth, and transverse relaxation rate, 1/T₂ exhibit distinct features, from which three vortex phases are identified, namely, flux-line liquid, glass and lattice. Also, motional narrowing of linewidth and double-peak structure of 1/T₂ indicate significant thermal motion of flux-lines in this low T_c and nearly isotropic 3D superconductors. This behavior will be compared with cuprate superconductors.