Anomalous vortex broadening near $YBa_2Cu_3O_{7-\delta}$ probed using β-NMR

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Beta-detected NMR (β-NMR) of low energy implanted $^8Li^+$ was used to monitor the lineshapes, *i.e.* magnetic field distributions, in a silver film deposited on hole-doped $YBa_2Cu_3O_{7-\delta}$ (YBCO) high-T_C superconductors. The vortex lattice lines forming inside the superconductor above H_{c1} and below T_C emerge into the silver film and broaden the resonances. The field-dependence of the resonance lineshapes below and above T_C was studied. The measured lineshapes are symmetric and show unexpected broadening at higher fields inconsistent with an ideal static vortex lattice.

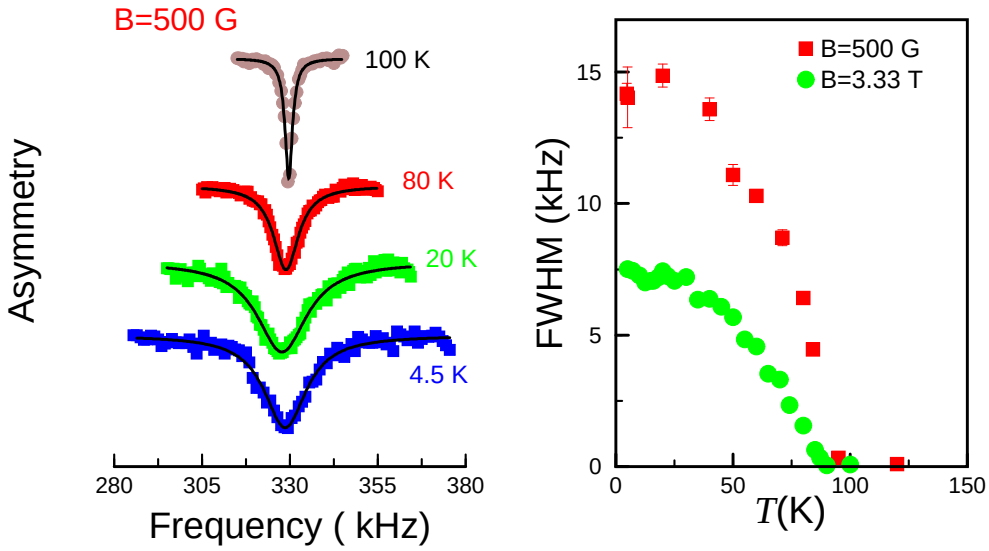

Fig. 1: Asymmetry and full width at half maximum (FWHM) in $Ag/YBa_2Cu_3O_{7-\delta}$ single crystal.