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Positive Upper Critical Field Curvature in Niobium Thin Films: Dependence on Purity PHILLIP BROUSSARD, Covenant College, ANGELA HUNZIKER, University of Basel — Thin films of niobium deposited by magnetron sputtering have been characterized by critical field measurements with the magnetic field applied perpendicular to the film plane. Film thickness varied from 16 to 100 nm, and using various deposition conditions, the parameter $\lambda_{\mathrm{tr}} = 0.882\xi_0/\ell_{\mathrm{tr}}$ (where ξ_0 is the BCS coherence length and ℓ_{tr} is the elastic mean free path) varied from 2 to 14. Even films that are considered in the "dirty" limit ($\lambda_{\mathrm{tr}} >> 1$) show positive curvature compared to the standard WHHM model. As λ_{tr} decreases, we see a consistent rise in the curvature value, expressed by measuring $h/(1-t)$, where $h = B_{c2}(T)/B_{c2}(0)$ is the reduced field and $t = T/T_c$ is the reduced temperature. We will compare to Nb films produced in other labs.

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