

22. The total magnetic field, $B = B_{\text{local}} + B_{\text{ext}}$, satisfies $\Delta E = hf = 2\mu B$ (see Eq. 41-22). Thus,

$$B_{\text{local}} = \frac{hf}{2\mu} - B_{\text{ext}} = \frac{(6.63 \times 10^{-34} \text{ J}\cdot\text{s})(34 \times 10^6 \text{ Hz})}{2(1.41 \times 10^{-26} \text{ J/T})} - 0.78 \text{ T} = 19 \text{ mT} .$$