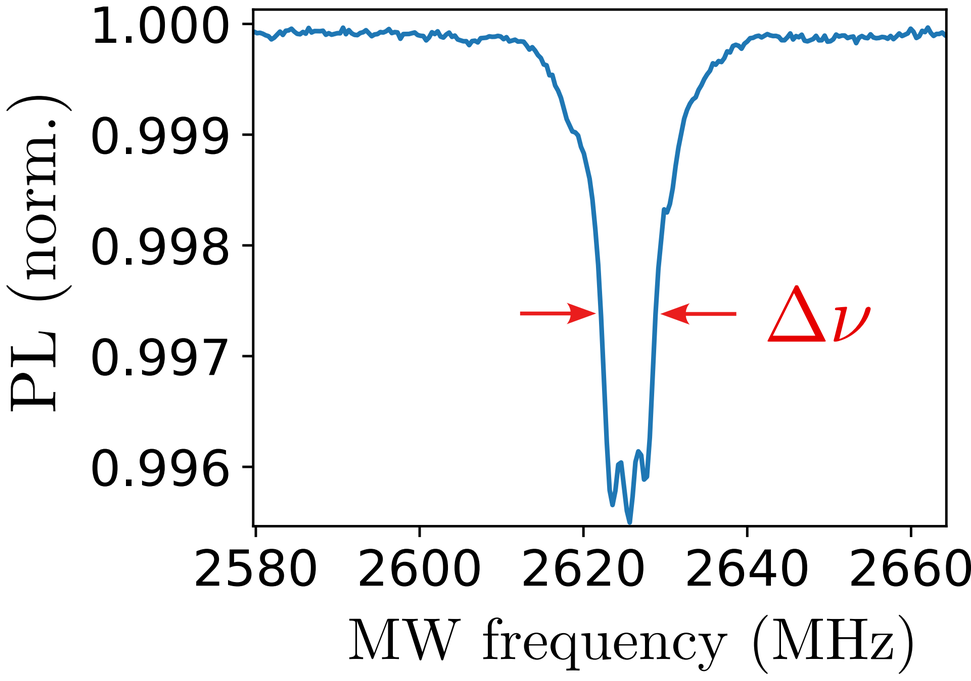
Ideal (DC) sensitivity for
N independent NV centers:

$$\eta[\mathrm{T}/\sqrt{\mathrm{Hz}}] \approx \frac{\hbar\sqrt{\Delta\nu}}{\mathrm{g}\mu_{\mathrm{B}}\mathrm{C}\sqrt{\mathrm{N}}}$$



- $\hbar$: Planck constant
- μ_B : Bohr magneton
- g : NV electron Landé factor

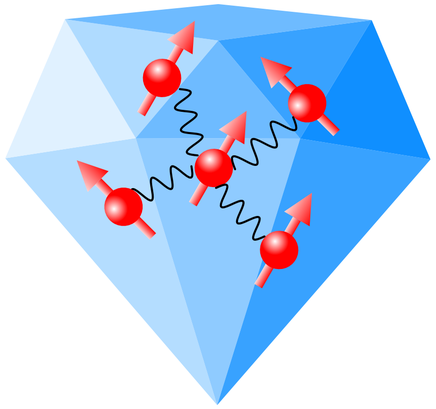
} Constants

- C : Spin readout contrast

} Experimental parameters

- N : Number of NV centers
- $\Delta\nu = \frac{1}{T_2^*}$: Spectral linewidth

} Sample parameters



Increased NV density:
$\rightarrow$ Interactions