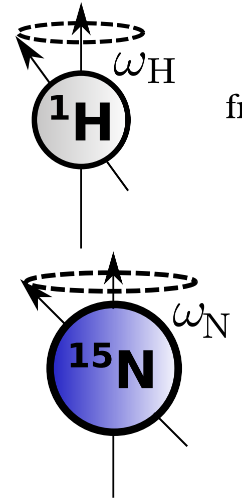
Redfield equations

$$\frac{1}{T_1} = \frac{d_{\mathrm{NH}}^2}{20}\left[J(\omega_{\mathrm{H}} - \omega_{\mathrm{N}}) + 3J(\omega_{\mathrm{N}}) + 6J(\omega_{\mathrm{H}} + \omega_{\mathrm{N}})\right]$$

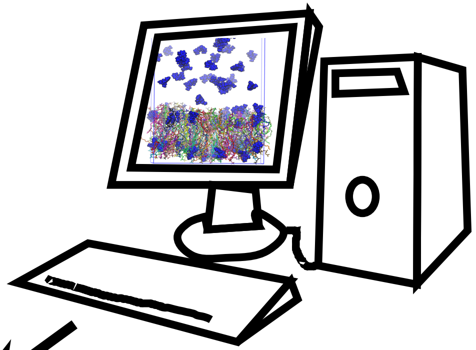
$$\frac{1}{T_2} = \frac{1}{2}\frac{d_{\mathrm{NH}}^2}{20}\left[4J(0) + J(\omega_{\mathrm{H}} - \omega_{\mathrm{N}}) + 3J(\omega_{\mathrm{N}}) + 3J(\omega_{\mathrm{H}}) + 6J(\omega_{\mathrm{H}} + \omega_{\mathrm{N}})\right]$$

$$\mathrm{NOE} = 1 + \frac{d_{\mathrm{NH}}^2}{20}\left[J(\omega_{\mathrm{H}} + 6J(\omega_{\mathrm{H}} + \omega_{\mathrm{N}}))\right]\frac{\gamma_{\mathrm{H}} T_1}{\gamma_{\mathrm{N}}}$$

Dipolar coupling constant



Larmor angular frequency



second-order rotational correlation function of N-H bond vector

spectral density

$$J(\omega) = 2\int_0^\infty C(t)cos(\omega t)\mathrm{d}t$$

$\boxed{\text{Fourier transform}}$

$$C(t) = \left\langle \frac{3}{2}\cos^2\theta_{t'+t} - \frac{1}{2}\right\rangle_{t'}$$