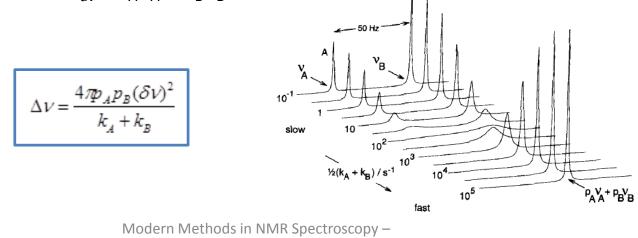
(6) Applications – digression into dynamics: lineshape

- Asymmetric two-side exchange for two, energetically nonidentical sites (populations in equilibrium p_A and p_B , with $p_A + p_B = 1$)
- Slow exchange:

$$\Delta \nu_A = \frac{k_A}{\pi} = \frac{1}{\pi \tau_A} \qquad \qquad \Delta \nu_B = \frac{k_B}{\pi} = \frac{1}{\pi \tau_B}$$

• Fast exchange: one line at weighed average of individual frequencies ($v_{qv} = p_A v_A + p_B v_B$)



Heteronuclei