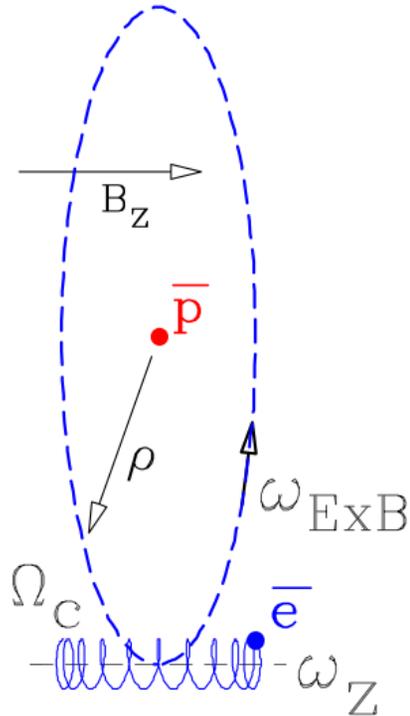
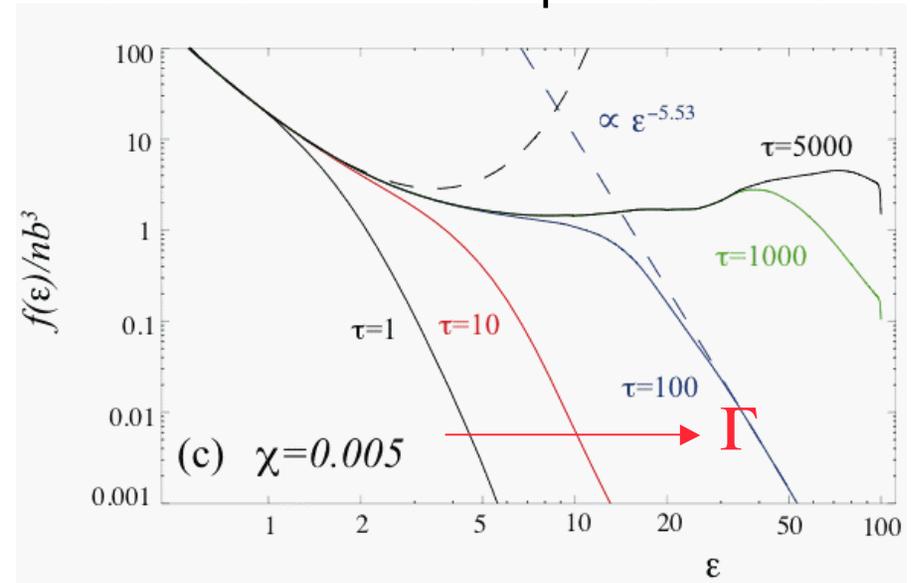


Theory of **recombination rate of antihydrogen** in a strong magnetic field. Atoms initially are weakly-bound "guiding center atoms"; radiation plus collisions with background plasma cause recombination.

Guiding center atom



Distribution of binding energies at different times-- power law tails



Atoms recombine most rapidly at weaker B , lower T

Steady-state flux to deeper binding (recombination rate):

$$\Gamma = C(\chi) n \bar{v} b^2 n b^3 = 10^5 \text{ s}^{-1} C(\chi) \frac{(n / 10^8 \text{ cm}^{-3})^2}{(T / 4\text{K})^{9/2}}$$

$$\chi = \frac{\bar{v}}{b \Omega_c} = 0.0013 \frac{(T / 1\text{K})^{3/2}}{B / 1\text{Tesla}}$$

χ	C
0	0.076
0.001	0.1
0.005	0.14
∞	0.76