1
- Q: How does the coherence time of an ensemble of a dilute, Doppler-broadened atomic gas scale with temperature?
- A: Coherence time tc scales with one over the most probable speed, so 1/sqrt{T}

2
- Q: When discussing the Doppler limited coherence time, there are two ways to understand it: treat the photon as wave and atom as particle or vice versa. In the first picture, after going into a rotating frame (eliminating the omega t component), the phase of the light is static, and therefore coherence time can be understood by the spread of the atoms over a wavelength sized region. In the second picture, the atom is considered as wave with De Broglie wavelength. In order to get a coherence time, you have to divide the length scale by a velocity. Which velocities?
- A: Atomic velocity and recoil velocity

3
- Q: What's the major requirement that a collision mechanism can cause Dicke narrowing?
- A: The internal degree of freedom is not affected by the collisions.

4
- Q: Does Dicke narrowing suppress also the second order Doppler effect?
- A: No. The first order Doppler effect is “averaged to zero” by confinement. The second order Doppler effect always has the same sign, independent of velocity.

5
- Q: In the tightly confined (Lamb-Dicke) regime, how does the Doppler shift of the carrier peak (zeroth order) scale with n and omega?
- A: The second order Doppler shift scales with (v/c)^2 or n hbar omega/m c^2