

# Light Scattering from a Dense Atomic Cloud

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The transmission of a cold atomic cloud of density comparable to, or higher than, one atom per cube of side equal to the wavelength of the resonant scattered light is affected by short-range dipole-dipole dephasing of the atomic coherences. Our experiment probes the coherent transmission of light close to the broad resonance of a cold cloud of bosonic atoms. The  $J = 0$  to  $J = 1$  strong transition of Strontium presents a non-degenerated fundamental level, which greatly simplifies the theoretical model of the transmission and makes the system formally equivalent to classical dipoles in the linear regime. We will show preliminary results on the density of our cloud and on the coherent transmission by it. We also discuss further observables we want to study in order to probe the effects of density on light scattering and diffusion through the dense atomic cloud.