Types of light scattering

* Elastic light scattering involves no change in wavelength (or photon energy) from the incident beam
* inelastic scattering involves a change
  + Stokes scattering occurs if the wavelength shift is to a longer wavelength (lower photon energy)
  + anti-Stokes scattering, involves a shift to a shorter wavelength. Anti-Stokes scattered light is generally weaker in intensity than the Stokes light
  + Inelastic light scattering is a sensitive probe of time-dependent material phenomena, including material excitations such as molecular rotations or vibrations

Basic Idea of Brillouin Scattering

* Brillouin scattering is inelastic light scattering from *collective* excitations of a condensed matter system such as magnons (magnetic spin waves) or acoustic phonons (sound waves) that produce timedependent density changes.
* Think of a plane wave with angular frequency w0 and propagation constant *k*0