Asymmetry of the natural line profile for the hydrogen atom

There are non-resonant corrections to the line profile which cause deviations from a Lorentz profile.

These corrections depend on the particular measurement process and thus indicate the limit up to which the concept of the energy of an excited atomic state has a physical meaning.

$\Delta E \approx 3\,\mathrm{Hz}$ **for the 1s-2p transition in H.**

Compton scattering