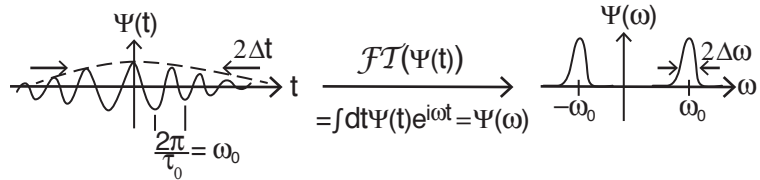


Music: Time and Frequency are Fourier-conjugate variables

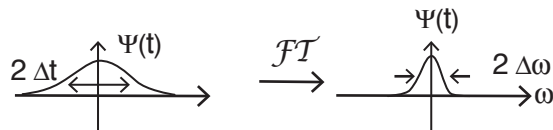
“Sound wave”

“Sound spectrum”



A sound oscillating with period τ_0 (frequency ω_0) and duration Δt has a spectrum with a peak at frequency ω_0 , and a spread of frequencies $\Delta\omega = 1/(2\Delta t)$.

Consider the case where $\omega_0=0$, just a single “pulse”:



The Gaussian is its own Fourier Transform!