PHYS 325: Lecture 20

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Given some Green's function $G(t)$ and some forcing $F(t)$, then our solution is

$$x_p(t) = \int_{\mathbb{R}} F(t')G(t-t')dt' \tag{1}$$

Such that

$$G(t-t') = H(t-t')\exp\left(\frac{-c(t-t')}{2m}\right)\frac{\sin(\omega_d(t-t'))}{m\omega_d} \tag{2}$$

Such that

$$H(t) = \begin{cases} 1 & t > t' \\ 0 & t < t' \end{cases} \tag{3}$$

Example

In the case of F_0 is a constant driving force, then we integrate from 0 to t.

Fourier Transformation

$$\tilde{f}(\omega) = \int_{\mathbb{R}} f(t)e^{-i\omega t}dt \tag{4}$$

Inverse FT:

$$f(t) = \frac{1}{2\pi}\int_{\mathbb{R}} \tilde{f}(\omega)e^{i\omega t}d\omega \tag{5}$$