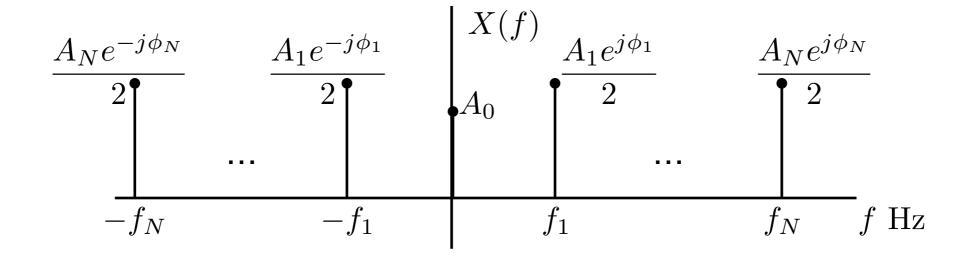# Spectrum — shows signal content as a function of frequency

$$x(t) \quad = \quad A_0 + \sum_{k=1}^{N} A_k \cos(2\pi f_k t + \phi_k)$$

$$= \quad A_0 + \sum_{k=1}^{N} \frac{A_k e^{j\phi_k}}{2} e^{j2\pi f_k t} + \frac{A_k e^{-j\phi_k}}{2} e^{-j2\pi f_k t}$$

Period $T_o > 0 : x(t + T_o) = x(t)$ for all t

fundamental period = smallest T_o

fundamental period of a sum = least common multiple of individual signal fundamental periods