1 Josephson Junction

basic IV relationship

$$I_s = I_c sin(\phi) \dot{\phi} = 2eV/\hbar$$

where $\phi = \phi_1 - \phi_2$ is the phase difference between the two superconducting electronodes.

Node flux

$$\Phi_n(t) = \int_{infty}^{t} V_n(t')dt'$$

Node charge

$$Q_n(t) = \int_{infty}^{t} I_n(t')dt'$$