RL Circuit: Energy Transfer During Current Shutdown

Loop rule: $IR + L\dfrac{dI}{dt} = 0 \quad (I > 0,\ \dfrac{dI}{dt} < 0)$

- $IV_L = LI\dfrac{dI}{dt}$: rate at which inductor releases energy
- $IV_R = I^2R$: rate at which energy is dissipated in resistor

Balance of energy transfer: $I^2R + LI\dfrac{dI}{dt} = 0$