RC Circuits: Discharging

- Loop: $q(t) / C + I(t)\, R = 0$
- Just after…: $q = q_0$
  - Capacitor is still fully charged
  - $q_0 / C + I_0 R = 0 \Rightarrow I_0 = -q_0 / (RC)$
- Long time after: $I_c = 0$
  - Capacitor is discharged (like a wire)
  - $q_\infty / C = 0 \Rightarrow q_\infty = 0$
- Intermediate (more complex)

  $q(t) = q_0\, e^{-t/RC}$

  $I_c(t) = I_0\, e^{-t/RC}$