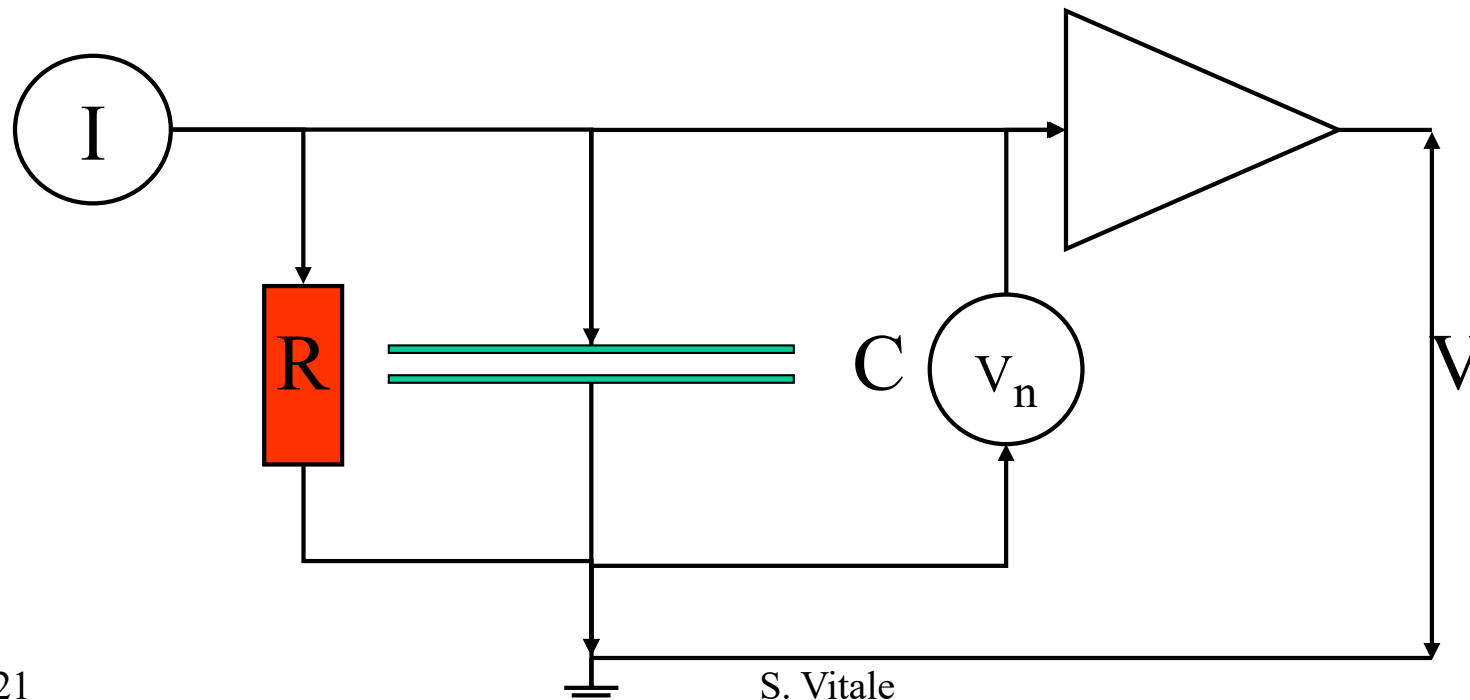


# Exercise

- Assume that one particle hits the detector represented by the capacitor of capacitance  $C$ .
- The arrival of the particle is represented by a current generator generating a current  $I(t)=e\delta(t)$
- Losses in the capacitor are represented by a parallel resistor of resistance  $R$ .
- Voltage  $V$  across  $C$  is read out by an ideal amplifier that whose noise properties, represented by the generator  $V_n$ , are those of the commercial amplifier discussed in the last lecture (assume white noise continues at higher frequencies)
- What is the minimum error on  $e$  if  $R=100\text{ k}\Omega$  and  $C\text{ }500\text{ pF}$ ?



# Example a low noise amplifier

## Low-Noise Voltage Preamplifier

SR560 — DC to 1 MHz voltage preamplifier

