1 Filters

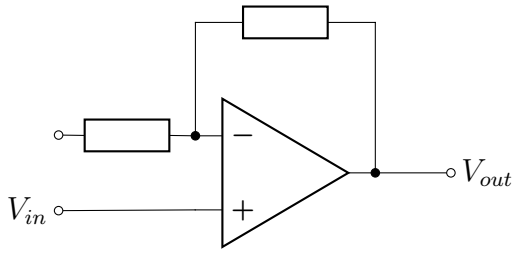

Figure 1: Non inverting op amp

$$\begin{aligned} V_- &= \frac{R_1}{R_1 + R_2} V_{out} \\ V_- &= V_+ = V_{in} \\ V_{out} = V_{in} \frac{R_1 + R_2}{R1} V_{out} &= \left(1 + \frac{R_2}{R_1}\right) V_{in} \end{aligned} \tag{1}$$

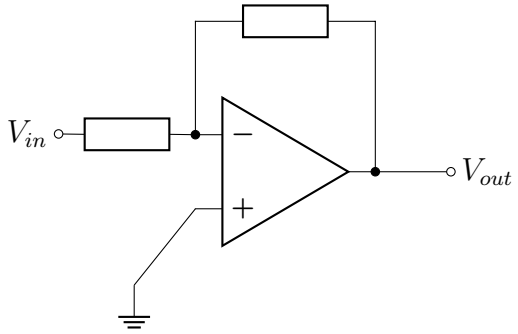

Figure 2: Inverting op amp

$$\begin{aligned} V_- = V_+ &= 0V \\ i_{in} = \frac{V_{in}}{R_1}; \quad i_f &= -\frac{V_{out}}{R_2} \\ V_{out} &= -\frac{R_2}{R_1} V_{in} \end{aligned} \tag{2}$$

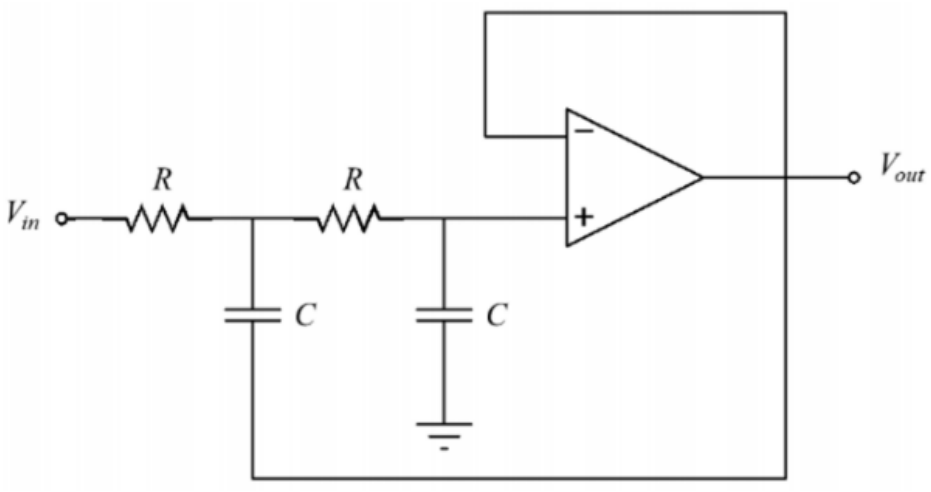

Figure 3: Sallen-key low pass

$$f_c = \frac{1}{2\pi\sqrt{R_1 R_2 C_1 C_2}} \tag{3}$$

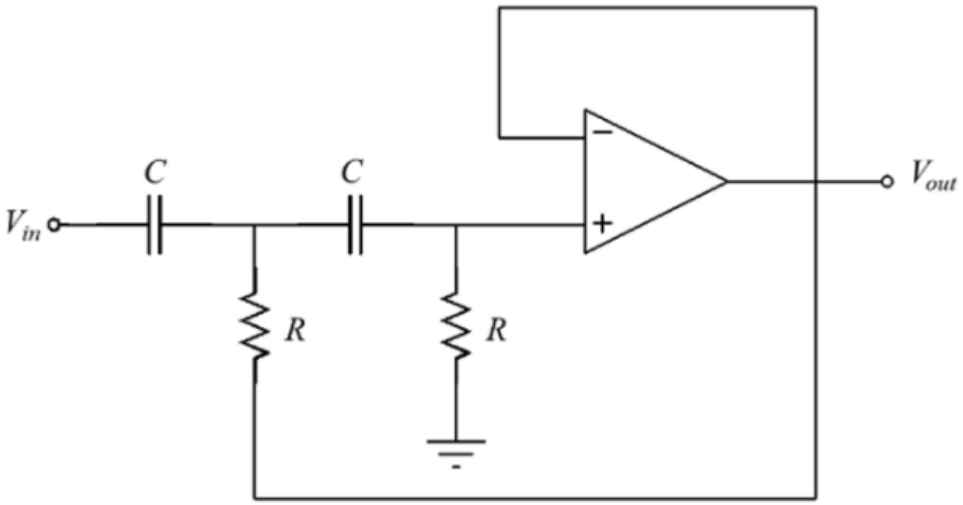

Figure 4: Sallen-key high pass

$$f_c = \frac{1}{2\pi\sqrt{R_1 R_2 C_1 C_2}} \tag{4}$$

2 Methods and Results

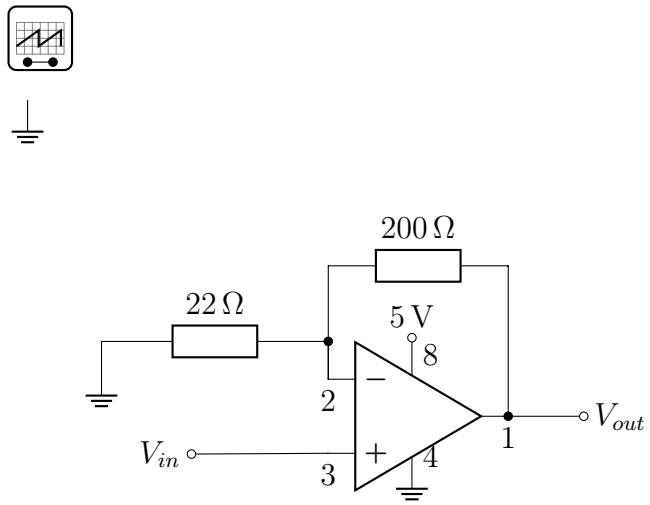

Figure 5: Non inverting op amp