



香港中文大學
The Chinese University of Hong Kong

CENG4480 Lab2: Op Amp (2)

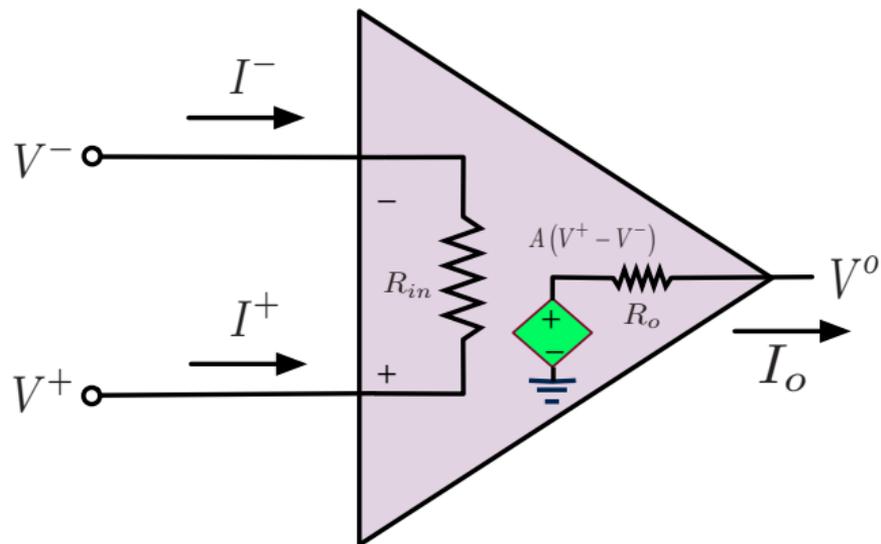
ZHU Binwu and LIU Hongduo

Department of Computer Science and Engineering
The Chinese University of Hong Kong



Golden Rule of an Ideal Op Amp

- ▶ R_{in} goes infinity
- ▶ $I^+ = I^- = 0$

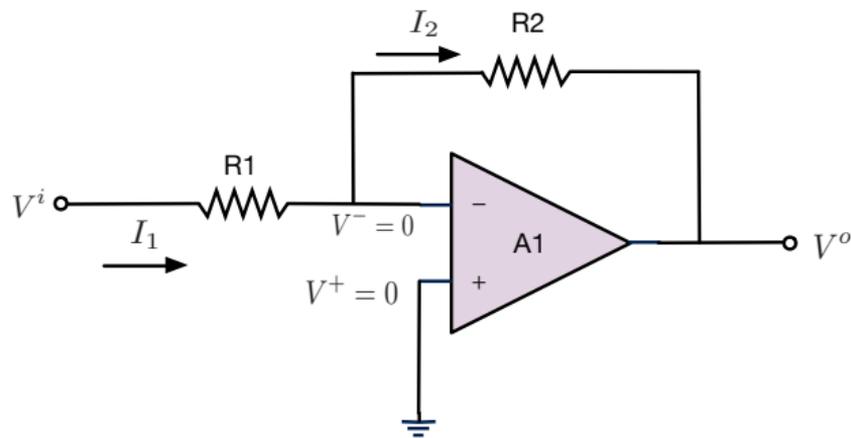


An Ideal Op Amp.



Golden Rule of an Ideal Op Amp with Negative Feedback

► $V^+ = V^-$

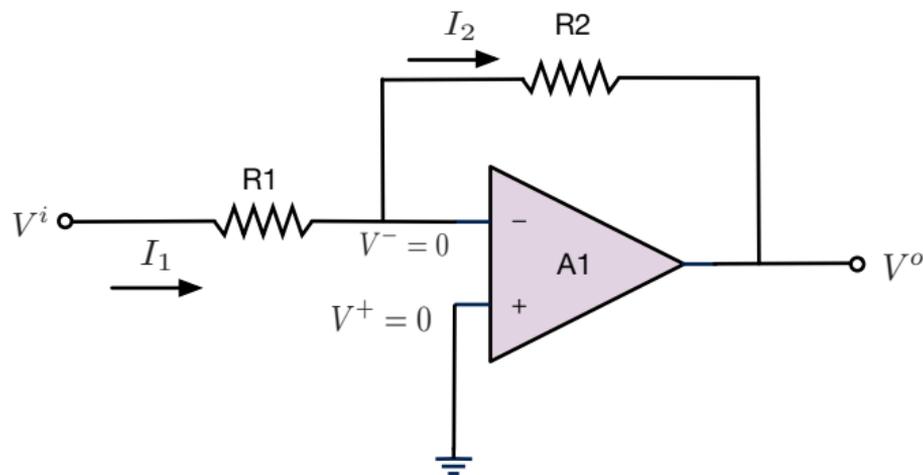


An Inverting Amplifier.



Analysis on Circuit with An Ideal Op Amp

- ▶ $I^+ = I^- = 0$
- ▶ $V^+ = V^-$



Analysis on Inverting Amplifier.

$$I_- = 0$$

$$I_1 = I_2 + I_- = I_2$$

$$I_1 = \frac{V^i - V^-}{R_1} = \frac{V^i}{R_1}$$

$$I_2 = \frac{V^- - V^o}{R_2} = \frac{-V^o}{R_2}$$

$$G = \frac{V^o}{V^i} = \frac{-R_2}{R_1}$$



Suggestions for Experiments

- ▶ 😊 Be careful about the offset value.
- ▶ 😊 Use digital multimeter to obtain resistances.
- ▶ 😊 The capacitance of capacitor 103 is $0.01\mu F$
- ▶ 😊 The capacitance of capacitor 104 is $0.1\mu F$

