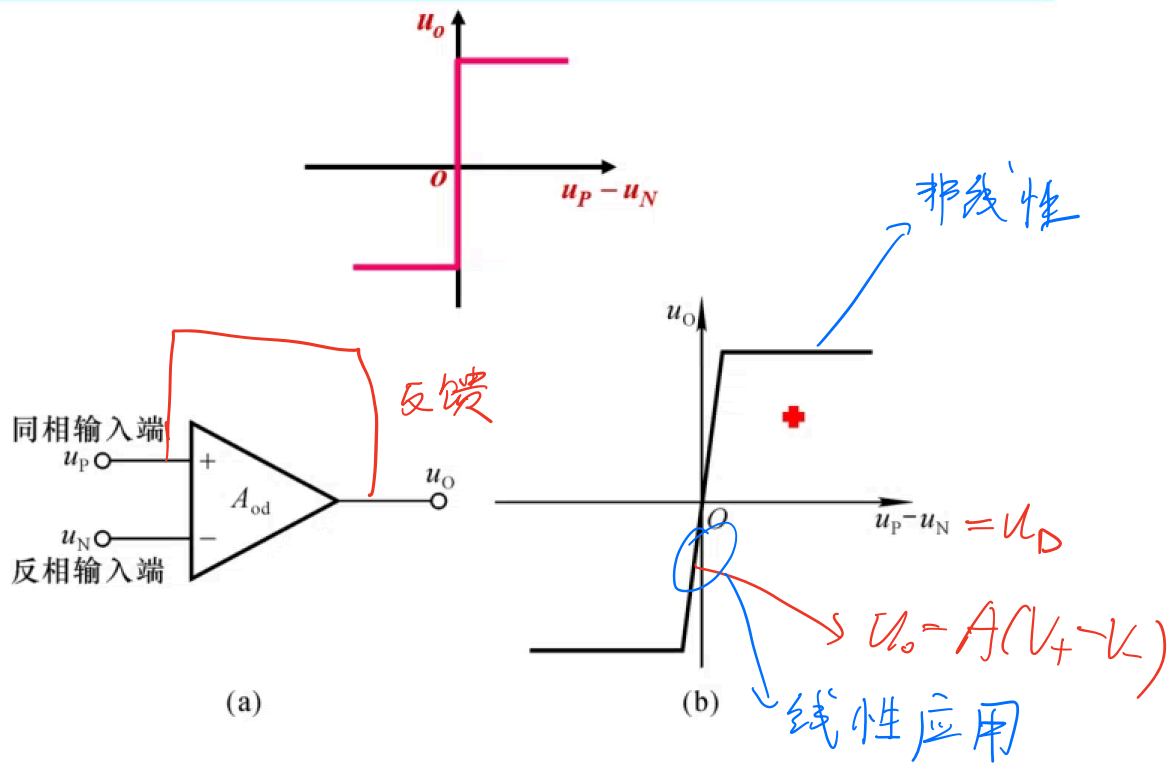


非线性

反馈

$u_o = A(V_+ - V_-)$

线性应用

线性应用：

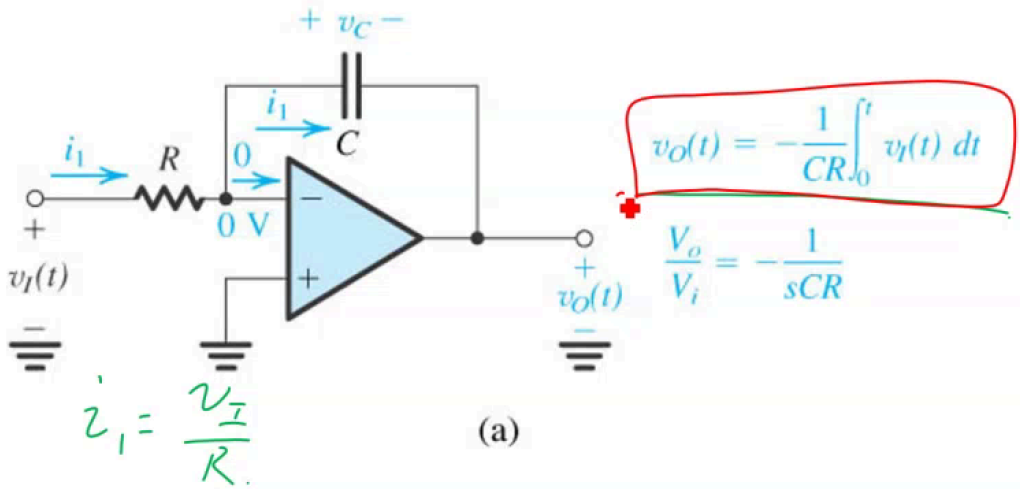
$u_p = u_N$ ， $i_N = i_p = 0$ ， 负反馈

非线性应用：

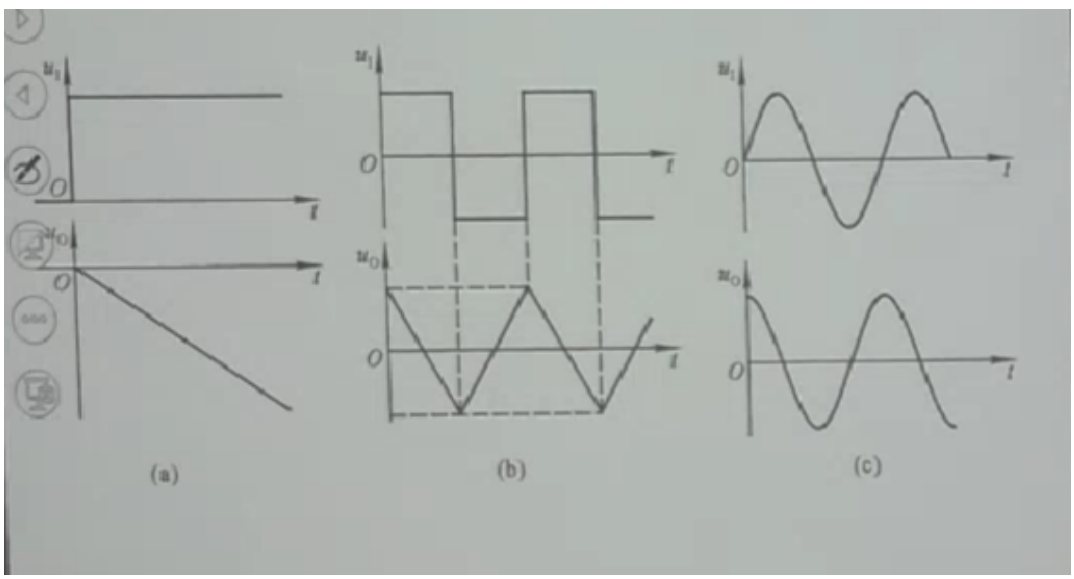
u_o $\begin{cases} +U_{max} \rightarrow u_p > u_N \\ -U_{max} \rightarrow u_p < u_N \end{cases}$

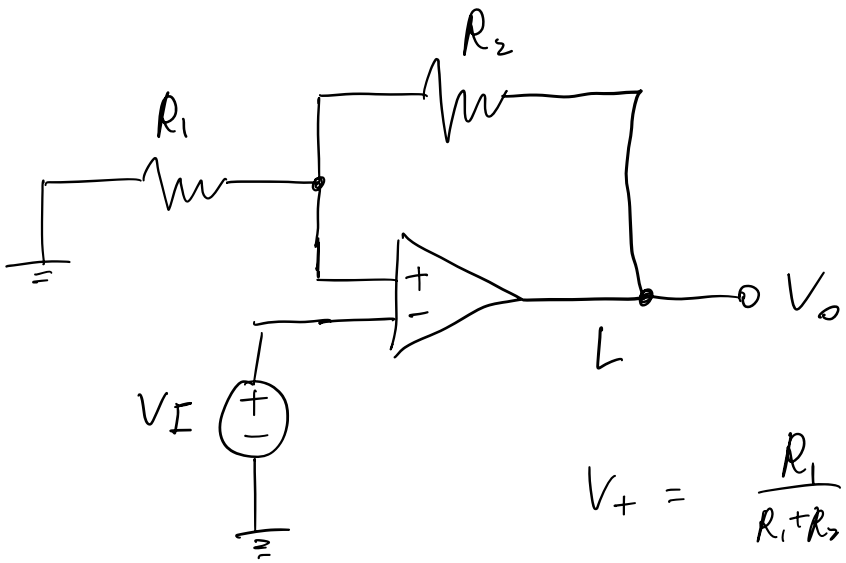
$i_p = i_N = 0$

● 积分器



The Miller or inverting integrator.

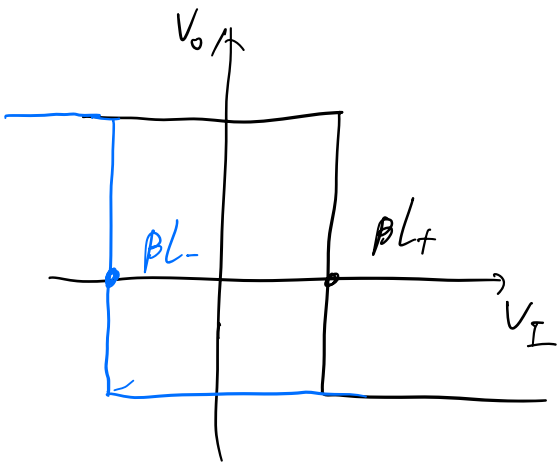


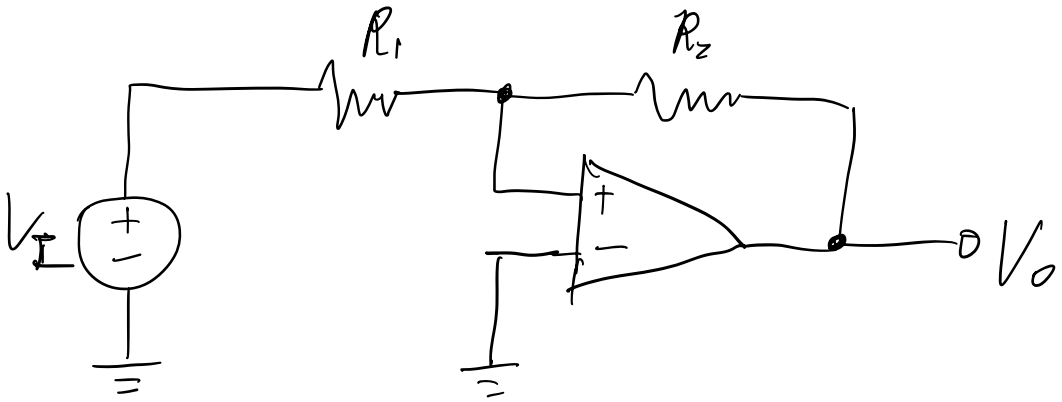


$$V_+ = \frac{R_1}{R_1+R_2} L = \beta L$$

当 $L = L_+ > 0$.

当 $L = L_- < 0$

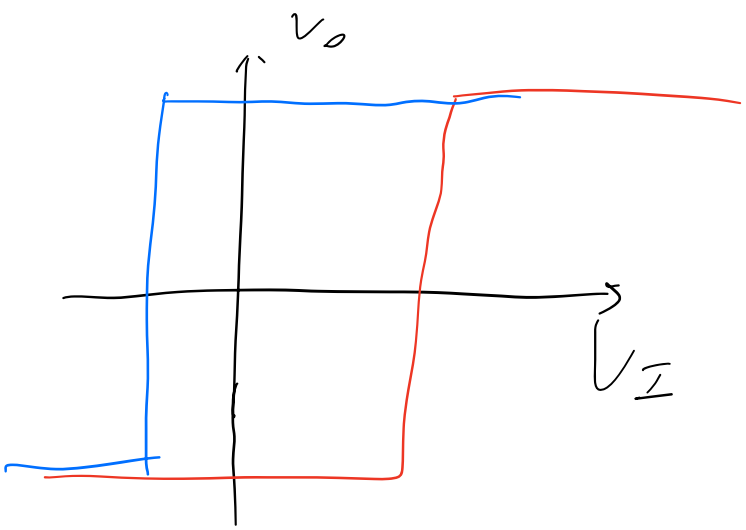




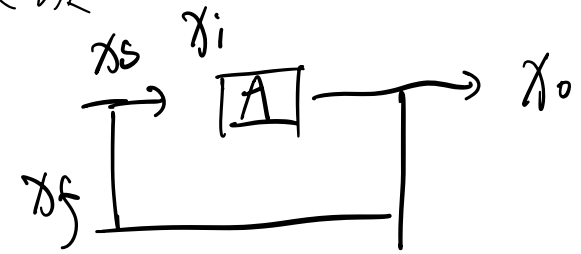
$$V_+ = V_I \frac{R_2}{R_1+R_2} + V_O \frac{R_1}{R_1+R_2}$$

$$V_I \frac{R_2}{R_1+R_2} + L_+ \frac{R_1}{R_1+R_2}$$

$$V_I \frac{R_2}{R_1+R_2} + L_- \frac{R_1}{R_1+R_2}$$



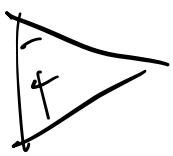
反馈



$x_i = x_s$

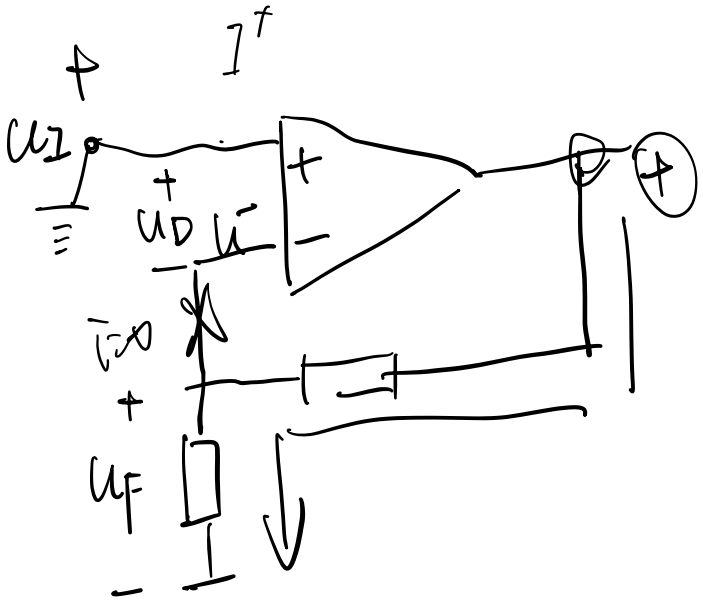
$x_i = x_s + x_f$ 正

$= x_s - x_f$ 负



$u_D = u_+ - u_-$

$I_+ \approx I_- \approx 0$



$u_I = u_O + u_F$

$u_D = u_I - u_F$ 负