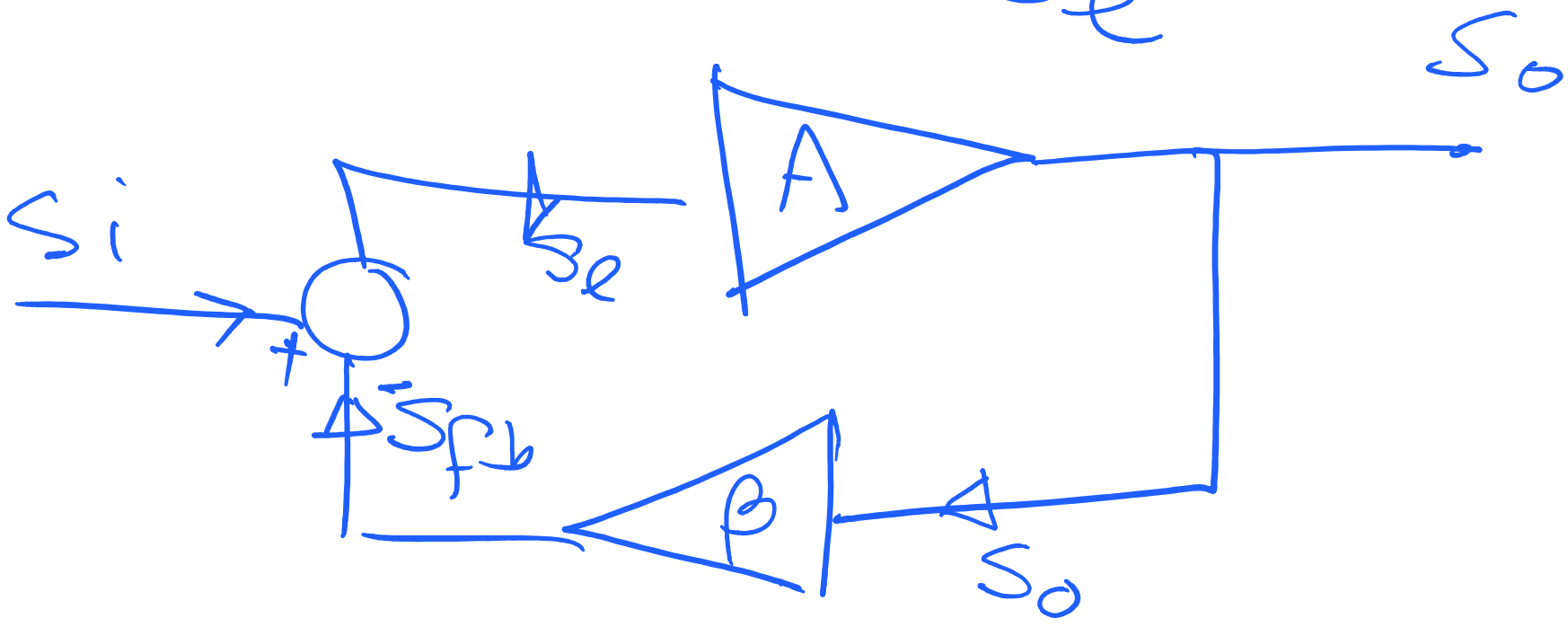
Feedback

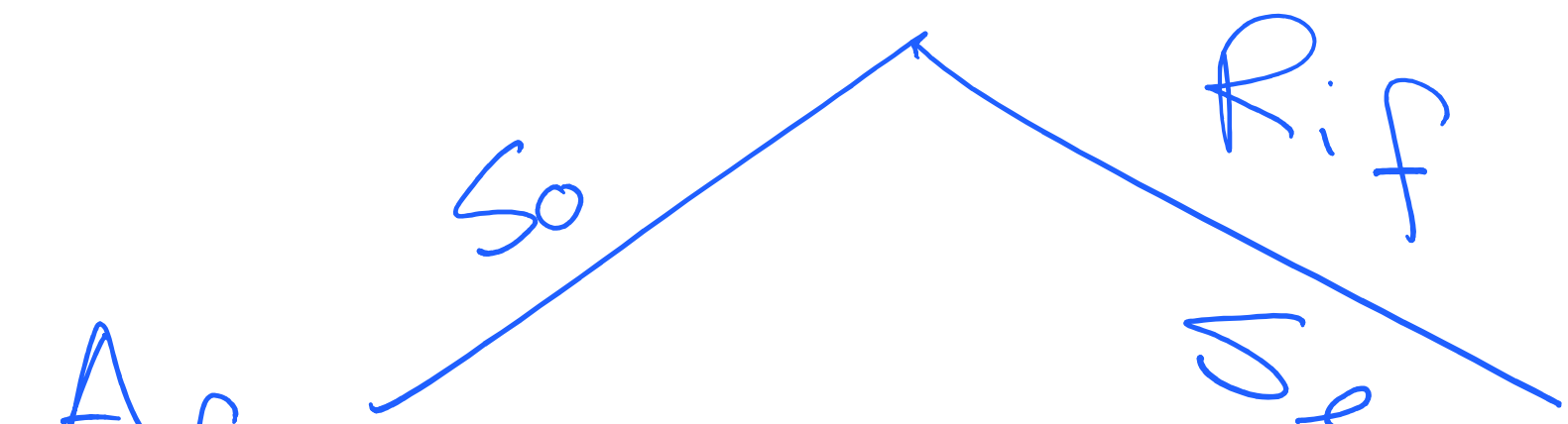
Monday, April 25, 2016 3:38 PM

$$A = \frac{S_o}{S_e}$$



$$\beta = \frac{S_{fb}}{S_o}$$

$$S_i = S_e + S_{fb}$$



$$S_i = \frac{S_o}{A} + \beta S_o = \frac{S_o}{A}\left[1 + \beta A\right]$$

$$\therefore A_f = \frac{S_o}{S_i} = \frac{A}{1 + \beta A}$$

R_{if} $\qquad S_i = S_e + S_{fb}$

$= S_e + \beta S_o$

$= S_e + \beta A S_e$

$= S_e [1 + \beta A]$

$S_i = I$ parallel

$$R_{if} = \frac{V_i}{S_i} = \frac{V_i}{S_e [1 + \beta A]}$$

$S_i = V_i$ Series

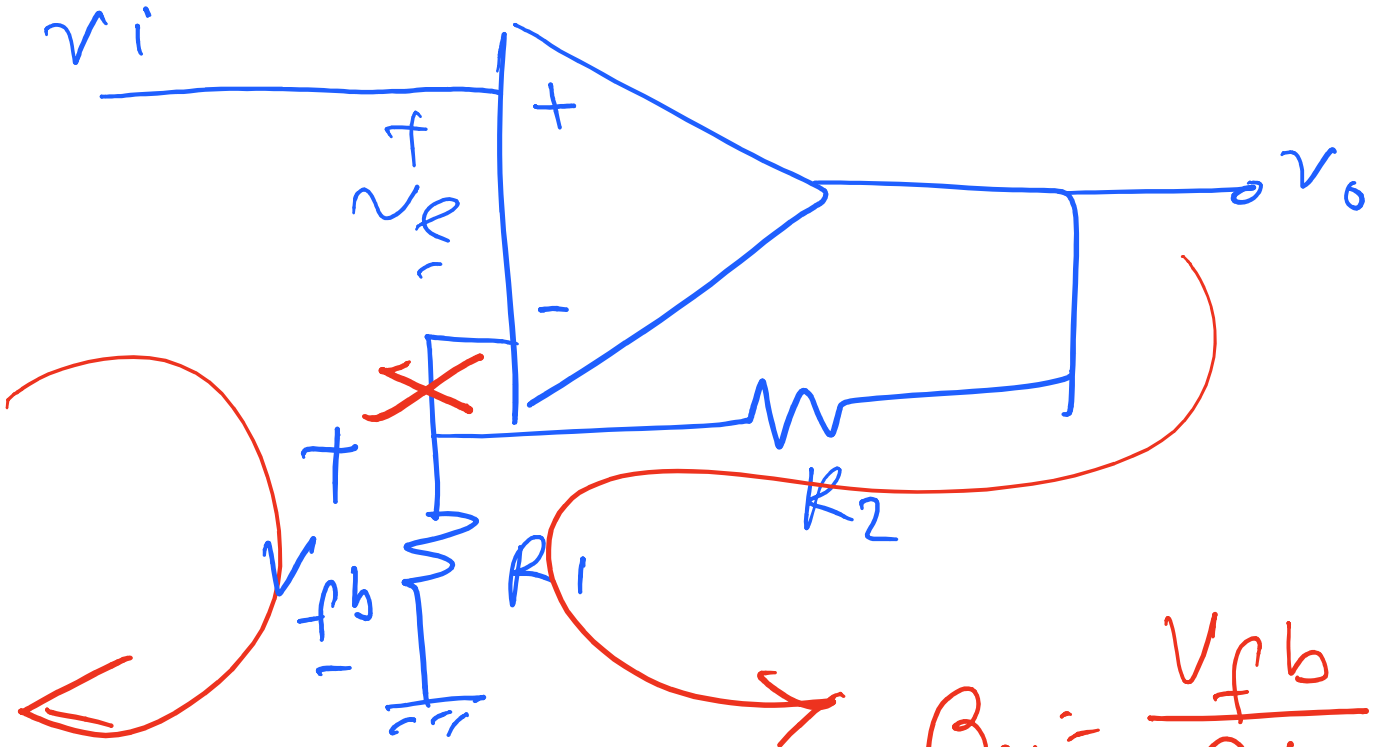
$$R_{if} = \frac{V_i}{I_i} = \frac{S_i}{I_i} = \frac{S_e [1 + \beta A]}{I_i}$$

$$V_{fb} = \frac{R_1}{R_1 + R_2} V_o = V_i$$

$$\therefore \quad A_{vf} = \frac{V_o}{V_i} = \left(\frac{R_1 + R_2}{R_1}\right) = \left(1 + \frac{R_2}{R_1}\right)$$

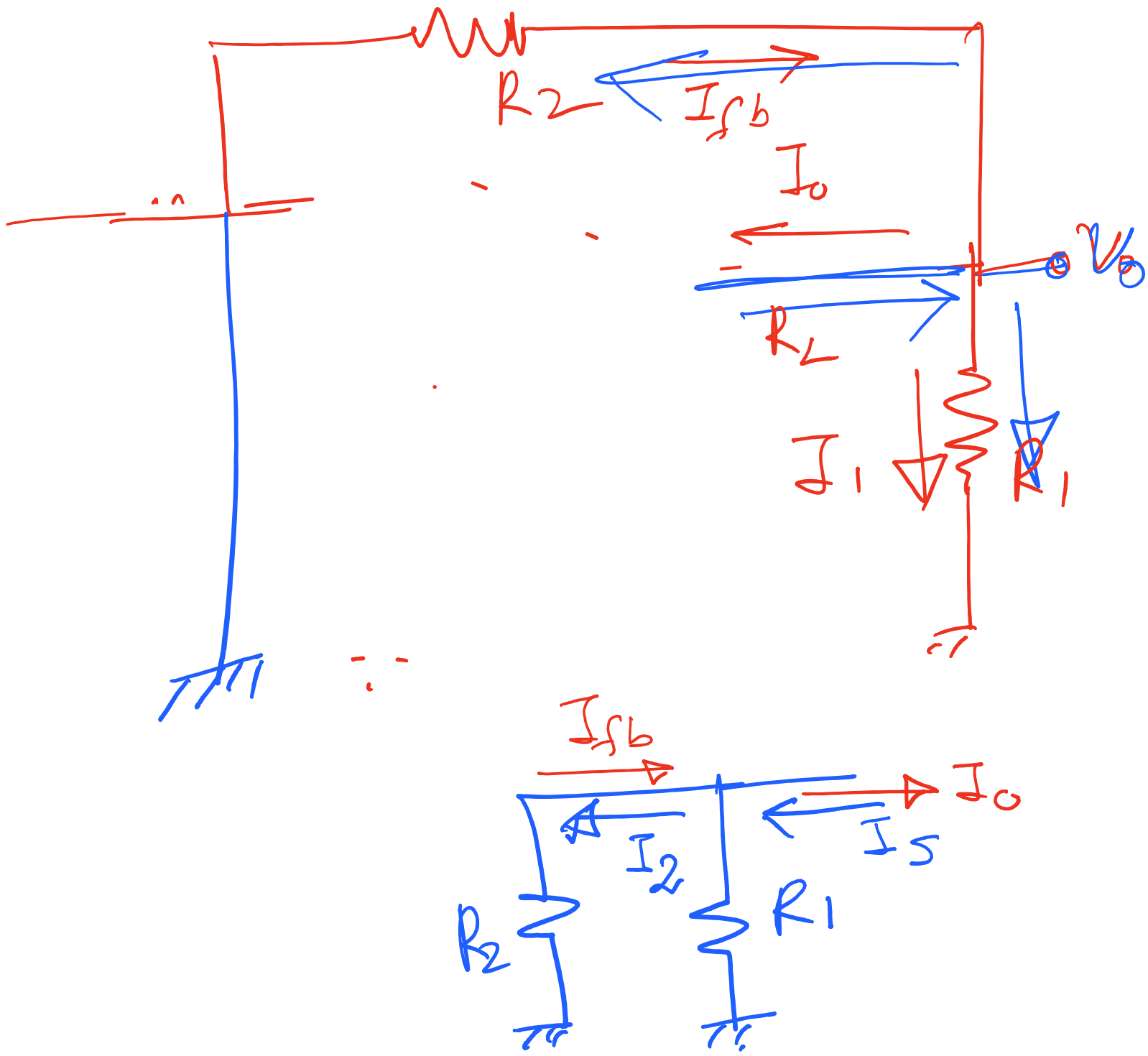
$$= \frac{1}{\beta_v}$$

$$\therefore \quad \beta_v = \left(\frac{R_1}{R_1 + R_2}\right)$$



$$\beta_v = \frac{V_{fb}}{V_o}$$

$$= \frac{R_1}{R_1 + R_2}$$



$$I_2 = \frac{R_1}{R_1 + R_2} I_s$$

$$-I_{fb} = \frac{R_1}{R_1 + R_2} (-I_o)$$

$$\therefore \beta_i = \frac{I_{fb}}{I_o} = \left(\frac{R_1}{R_1 + R_2} \right)$$

I_{fb}

$$\beta = \frac{}{V_o}$$

$$V_o = R_1 \times I_1 = I_S \times \frac{R_2}{R_1+R_2} \times R_1$$

$$-I_{fb} = I_2 = I_S \times \frac{R_1}{R_1+R_2}$$

$$I_{fb} = -I_S \frac{R_1}{R_1+R_2}$$

$$\therefore \beta_g = \frac{I_{fb}}{V_o} = \frac{-I_S \frac{R_1}{R_1+R_2}}{I_S \frac{R_2}{R_1+R_2} \times R_1}$$

$$= \boxed{-\frac{1}{R_2}}$$