

Computation for subcritical flow

1-A

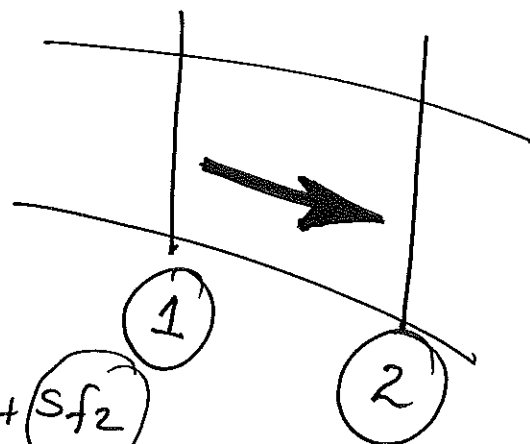
direction of
computation
←

$$E_1 = E_2 + \bar{S}_f \Delta X$$

$$f(y_1) = \underbrace{E_2}_{\text{known}} - E_1 + \bar{S}_f \Delta X$$

known

$$\bar{S}_f = \frac{S_{f1} + \underbrace{S_{f2}}_{\text{known}}}{2}$$



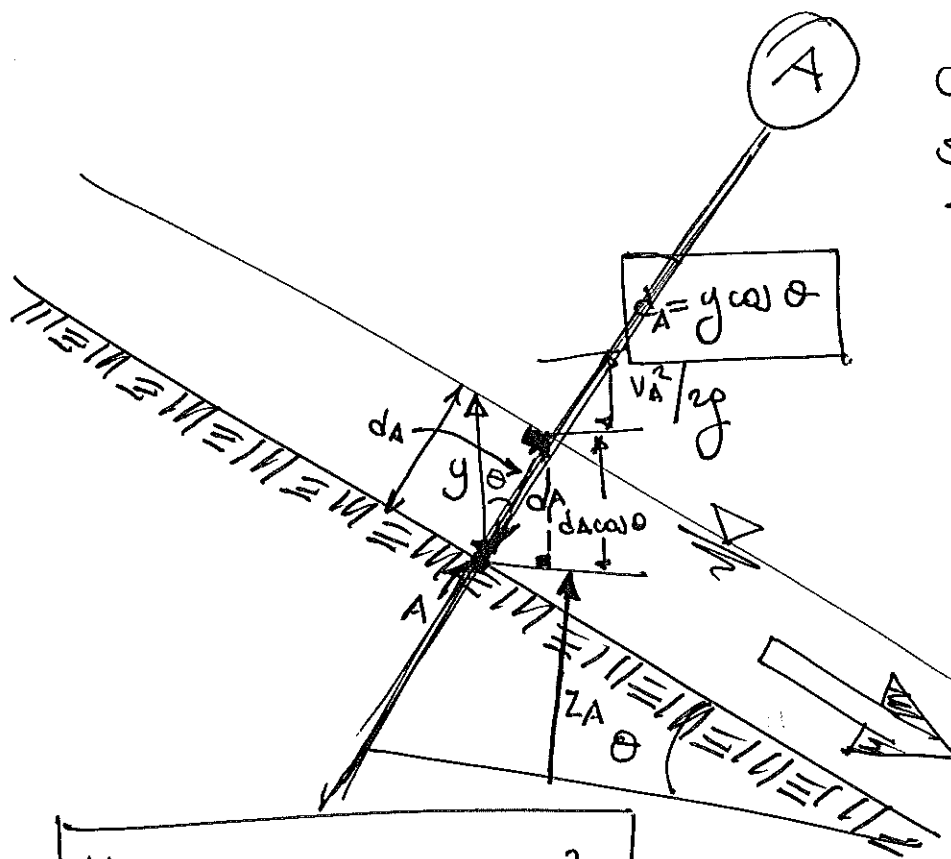
$$E_1 = y_1 + z_1 + \frac{V_1^2}{2g}$$

$$\frac{df}{dy} = - \left[1 + \frac{d}{dy} \left(\frac{V_1^2}{2g} \right) \right] + \frac{\Delta X}{2} \frac{dS_{f1}}{dy}$$

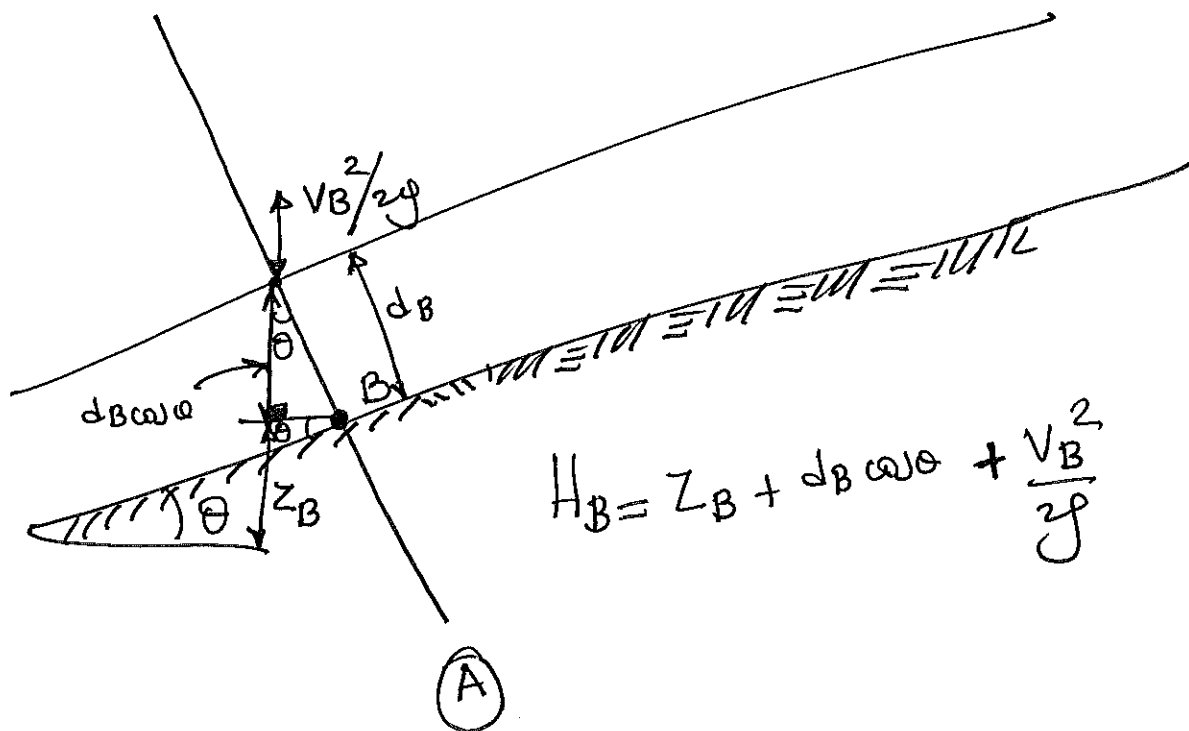
ΔX (positive)

$$y_1 = y_1^* - \frac{f(y_1^*)}{f'(y_1^*)}$$

CORRECTION FOR STEP SLOPE CHANNELS



$$H_A = Z_A + d_A \cos \theta + \frac{V_A^2}{2g}$$



$$H_B = Z_B + d_B \cos \theta + \frac{V_B^2}{2g}$$