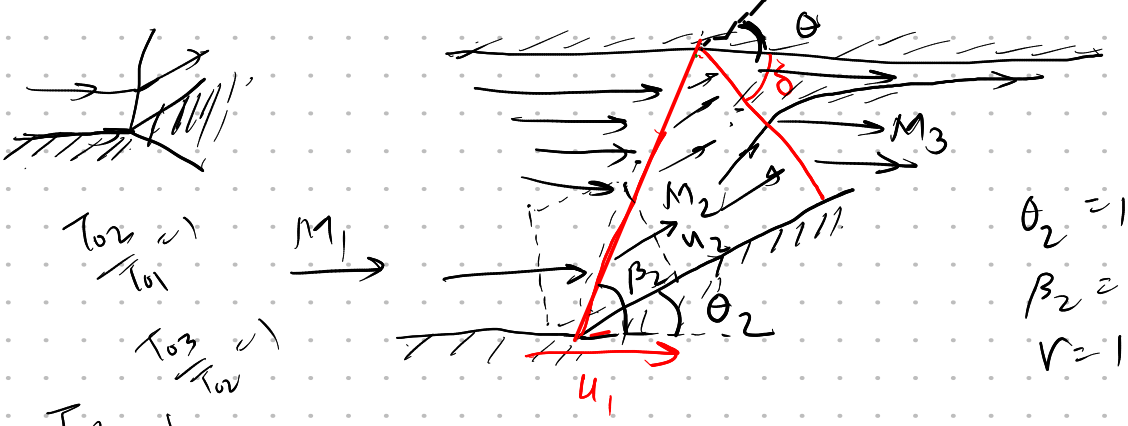


$\beta_3 = \theta + \delta$

$\theta_3 = \theta$

$\theta_2 = 15°$

$\beta_2 = 40°$

$\gamma = 1.4$

$\frac{T_{02}}{T_{01}} = 1$

$\frac{T_{03}}{T_{02}} = 1$

$\frac{T_{03}}{T_{01}} = 1$

$M_1, M_2,$

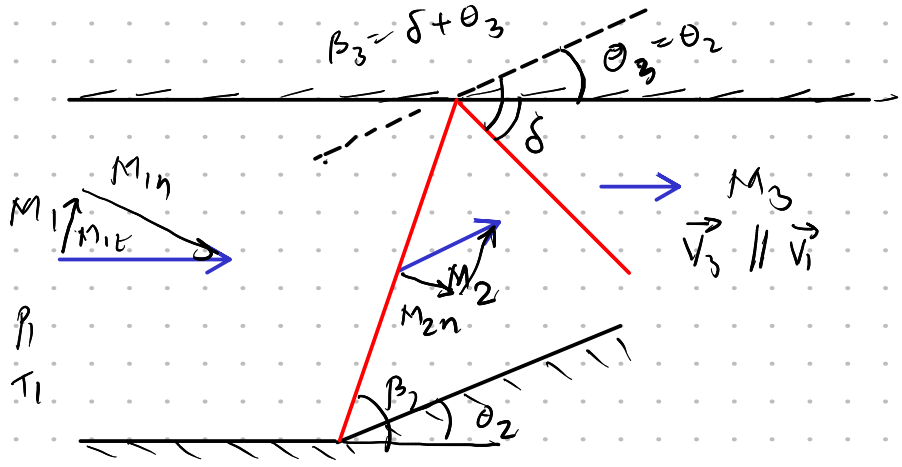
$\theta = f(\gamma, M_1, \beta)$ → Difficult to solve.

∴ from the tables, $M_1 = 2.28 / 2.24$

$u_1 \cos\beta$ $\quad$ $u_2 \cos(\beta - \theta)$

$M_{1n} = M_1 \sin\beta \xrightarrow[\text{shock Table}]{\text{Normal}} M_{2n}, \Rightarrow M_2 = \frac{M_{2n}}{\sin(\beta - \theta)}$

$\Rightarrow M_2 = 1.69$



$\beta_2 = 40°, \quad \theta_2 = 15° \xrightarrow[\text{plot}]{\text{oblique shock}} M_1 = 2.4$

$M_{1n} = M_1 \sin\beta_2$

↓ Normal shock table

$M_{2n} \longrightarrow M_2 = \sqrt{M_{2n}^2 + M_{2t}^2}$ ✗

$u_2 = \sqrt{u_{2n}^2 + u_{1t}^2}$ ✓

$M_2 = \frac{M_{2n}}{\sin(\beta_2 - \theta_2)}$ ←

$\frac{P_{02}}{P_1}$

$\frac{P_2}{P_1}, \frac{T_2}{T_1}, \frac{\rho_2}{\rho_1}$ ⟶ From N.S. tables for $M_{1n} = M_1 \sin\beta_2$

$T_{01} = T_{02}$ ⟶ Adiabatic

$P_{02} = \left(\frac{P_{02}}{P_1}\right) P_1$ → know — ①

↳ N.S table (M_{1n})

$\frac{P_{02}}{P_2} = \frac{P_{03}}{P_2} \cdot P_2 = \left(1 + \frac{\gamma-1}{2} M_2^2\right)^{\gamma/(\gamma-1)} \cdot P_2$ — ②

↳ N.S. table (M_{1n})

Now, for second oblique shock,

$M_2 = 1.69, \theta_3 = \theta_2 = 15^\circ \xrightarrow{\text{oblique shock graph}} \beta_3 = 55.5^\circ$

$\frac{P_3}{P_1} = \left(\frac{P_3}{P_2}\right)\left(\frac{P_2}{P_1}\right)$

$= \left.\frac{P_3}{P_2}\right|_{\hat{M}_{2n}} \times \left.\frac{P_2}{P_1}\right|_{M_{1n} = M_1 \sin\beta_2}$

NST MST

$\hat{M}_{2n} = M_2 \sin\beta_3$

$\frac{P_{03}}{P_{01}} =$ similarly $\left(\frac{P_{03}}{P_{02}}\right)\left(\frac{P_{02}}{P_{01}}\right)$

$\frac{P_3}{P_1}$

$h_0 = h + \frac{u^2}{2}$

$= e + pv + \frac{u^2}{2}$