

# ENAE 441 Notes

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# 1 Equations

$$\Delta v = u \ln \left( \frac{m_s + m_T + m_p}{m_s + m_T} \right) \quad (1)$$

Non-dimensionalizing

$$\frac{\Delta v}{u} = \ln \left[ \frac{m_s/m_p + m_p/m_s + 1}{m_s/m_p + m_T/m_p} \right] \quad (2)$$

Pressure  $\times$  Project Area = Stress  $\times$  material area

$$\frac{m_T}{m_p} = \frac{3\rho_m P}{2\sigma_y \rho_p} \quad (3)$$