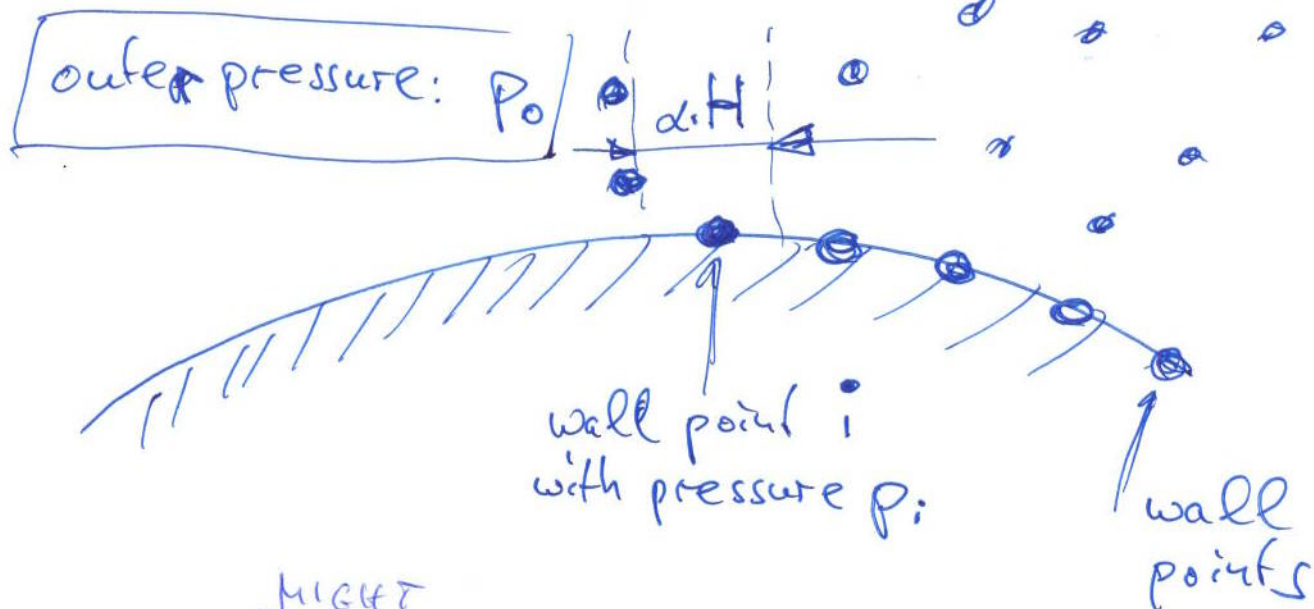


free surface
points



tear off ^{MIGHT} take place, if acceleration of the point i is big enough to push the point away from the free surface by a representative distance $\alpha \cdot H$ during a time step, i.e.

$$(|\dot{v}| \cdot \Delta t) \cdot \Delta t > \alpha \cdot H$$

$$-\frac{|\nabla p|}{\rho} \cdot \Delta t^2 > \alpha H$$

$$-\frac{P_i - P_0}{\rho} \Delta t^2 > (\alpha H)^2$$

$$-\frac{P_i - P_0}{\rho} \cdot C^2 \frac{H^2}{(v - v_0)^2} > (\alpha H)^2$$

$$-\frac{C^2}{\alpha^2} \cdot \frac{P_i - P_0}{\rho} - (v - v_0)^2 > 0$$

$$\dot{v} = -\frac{\nabla p}{\rho} + \text{viscous terms}$$

$$|\nabla p| \approx \frac{P_i - P_0}{\alpha \cdot H}$$

$$\Delta t := C \cdot \frac{H}{|v - v_0|}$$

C and α should be > 0 and < 1 , but free to choose ...