Lecture 14

10/7

Recap (Lec 13) Task 2, 3

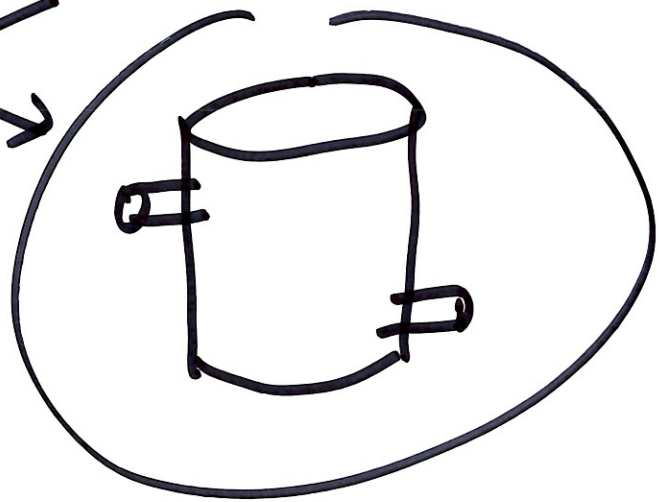
data (Matlab) → 3D curve

DM

(1) i2 x y z

"geometry"

one body of fluid



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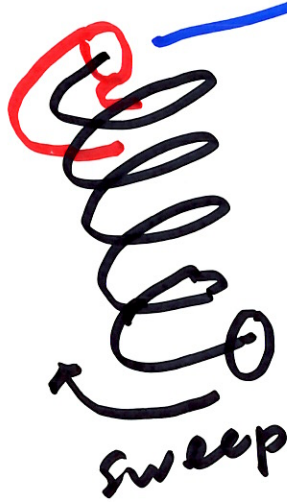


suppress line body

✓

Task 2

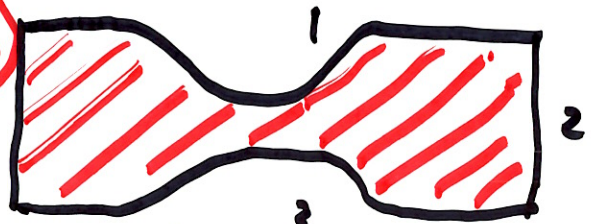
(19) Analysis Type
3D → 2D

Task 3

DM

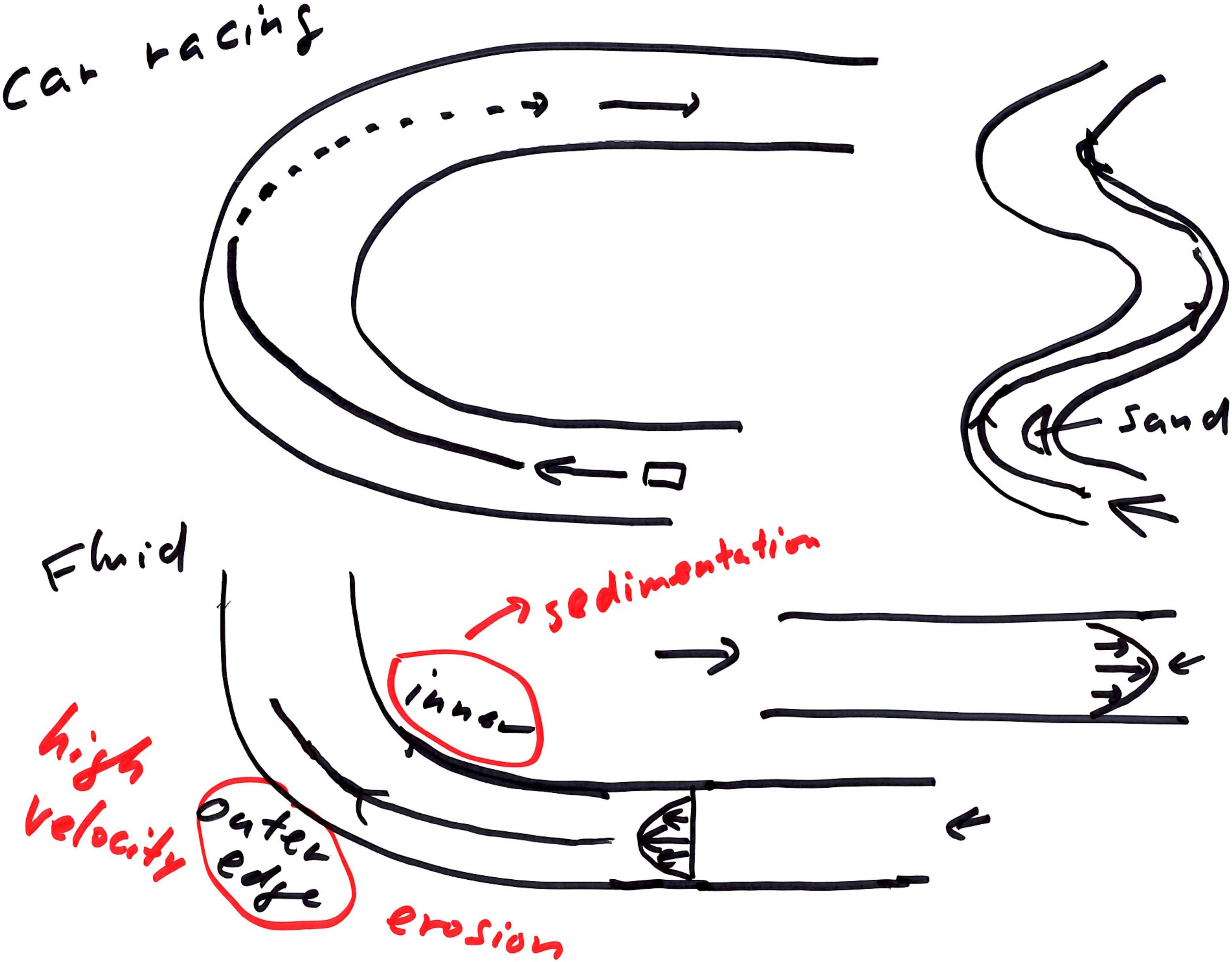
3D curve

surface from edges



Suppress line body

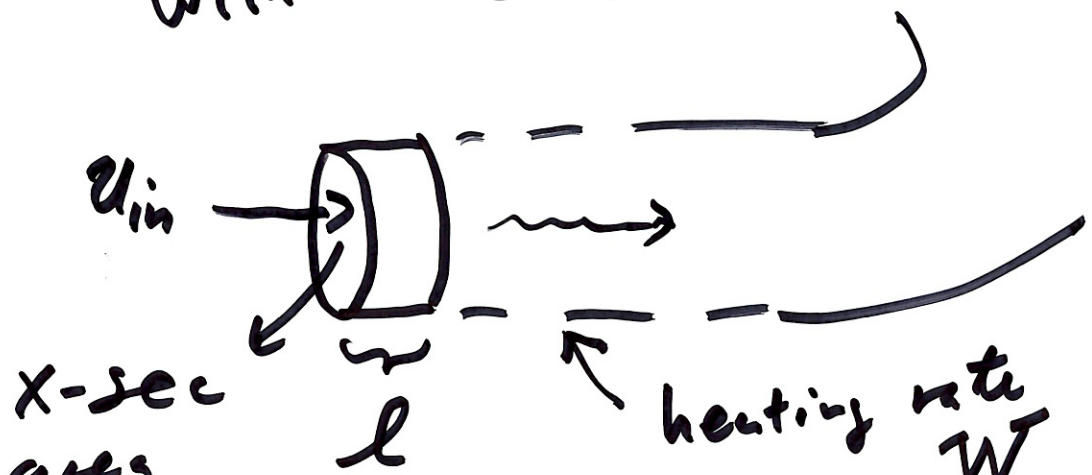
≡ xxx


Car racing
Sand
Fluid
sedimentation
inner
high velocity
outer edge
erosion

Task 2 $\Delta T = T_{out} - T_{in}$ (ignore viscous heating + molecular heat conduction)

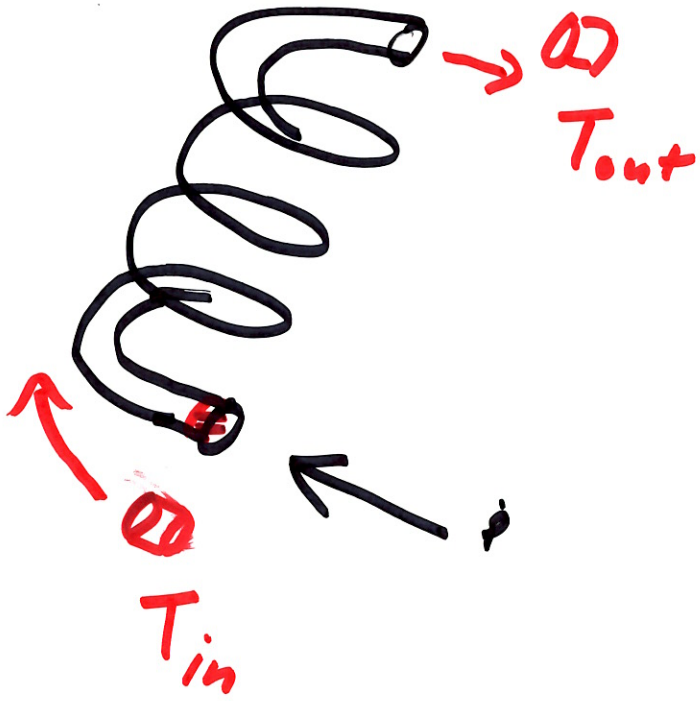
quick estimate of T_{out}

without CDF



time $T \sim \frac{L}{u_{in}}$

$T \cdot u_{in} \sim L$



L : total length of pipe

$W \times T \rightarrow J/m^2$

$W/m^2 \quad s$

sfc area of side b.

$a = l \cdot 2\pi r$

$W \times T \times a = W \times T \times l \times 2\pi r$ (J)

$A = \pi r^2$

~~$\Delta T = \frac{J}{\quad}$~~

$J = c_p \cdot \Delta T \cdot \rho V$

$= c_p \cdot \Delta T \cdot \rho \cdot (l \cdot A)$

Looking ahead ... (Project 2)

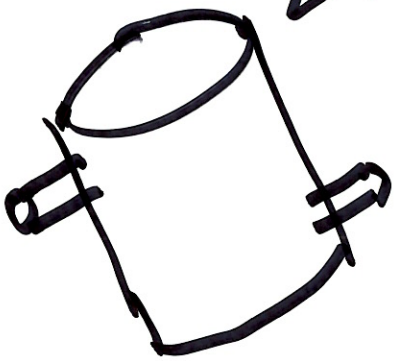
Proj 1

Task 1

~~dens~~ density variation

$\Delta\rho \approx \rho_{10c} - \rho_{40c}$

$\frac{\Delta\rho}{\rho_0} < 1\%$



* Two-phase (multi-phase) flow

* Flow with interfaces