Thermoacoustic Project WS 2024

PINN Project - EXPERIMENTS

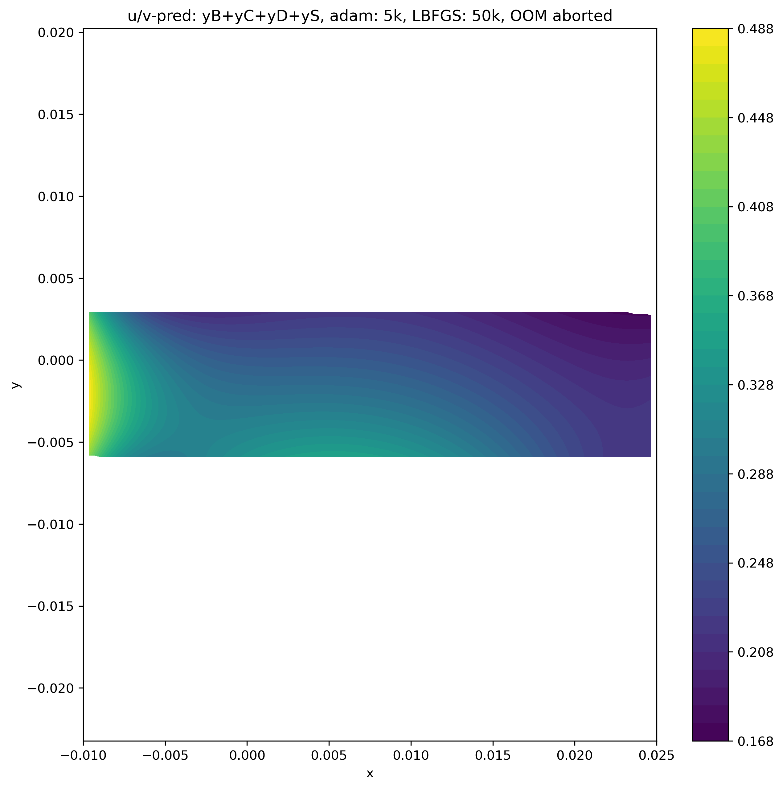
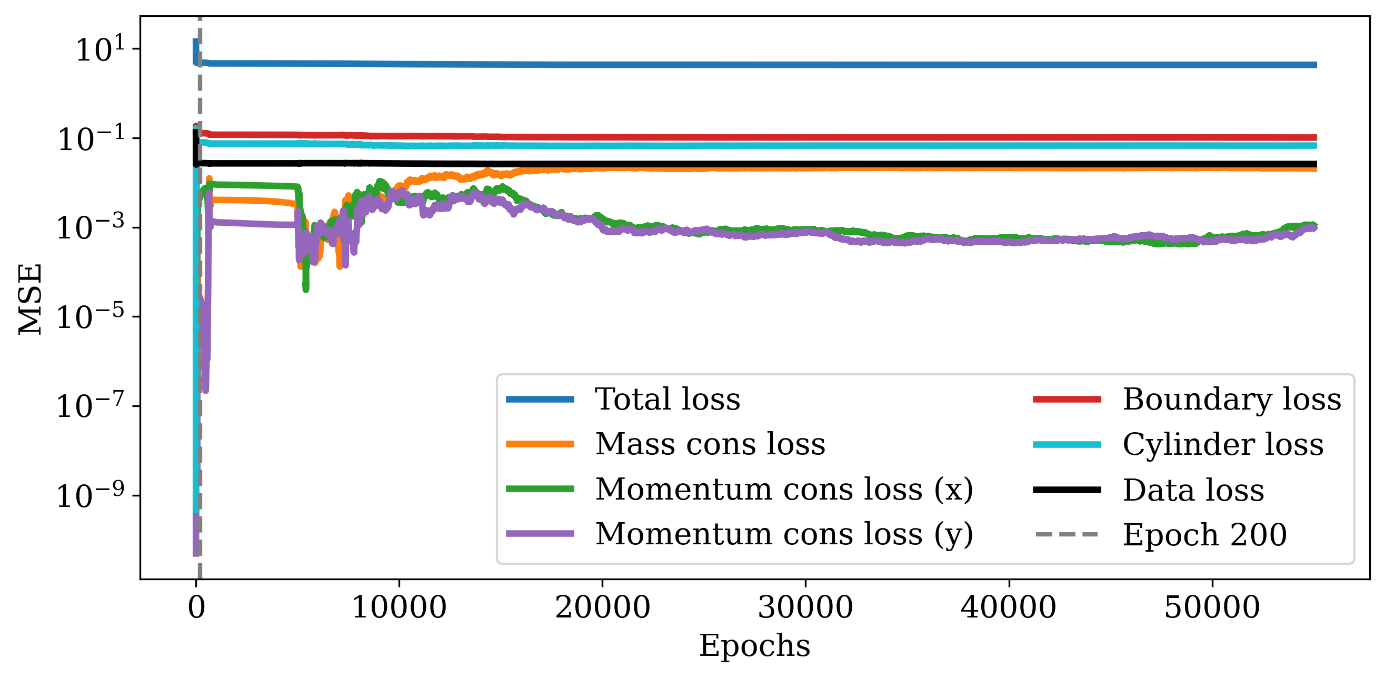
**24-12-17\_1521(checkpoints) - 2146(loss) (cluster1)**

adam\_iterations = 5000

lbfgs\_max\_iterations = 50000

total\_loss = 10\*yB + 10\*yC + 100\*yD + yS

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* Data\_loss converged but too high
* Mass\_loss rising
* Mom\_losses rising to

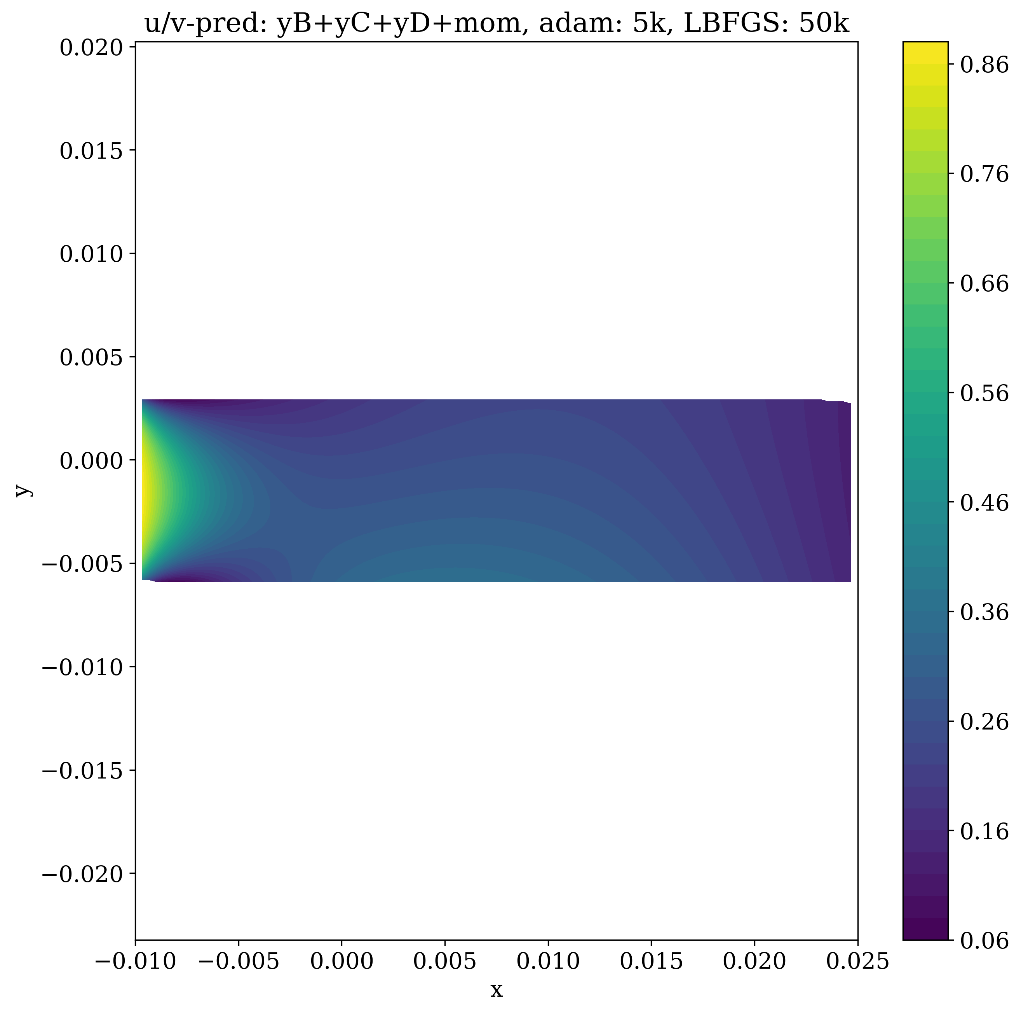
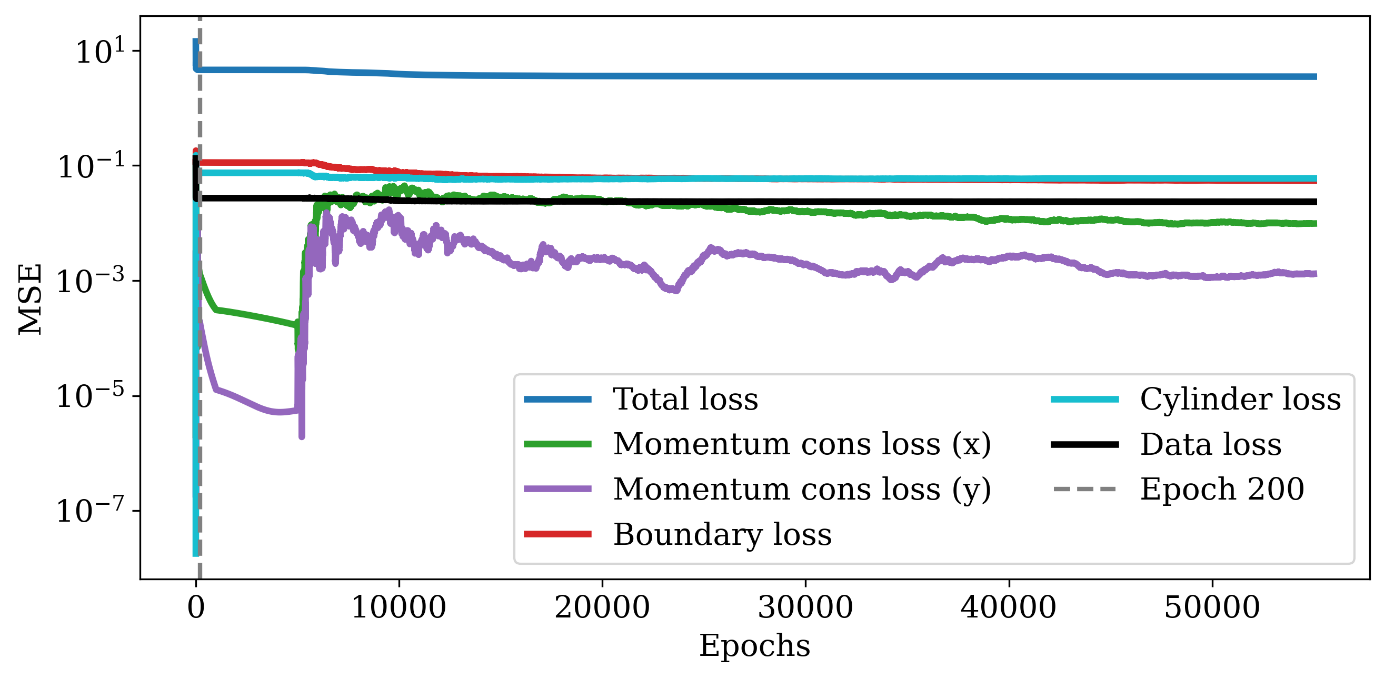
**24-12-17\_1557 – 0019 (cluster2)**

adam\_iterations = 5000

lbfgs\_max\_iterations = 50000

total\_loss = 10\*yB + 10\*yC + 100\*yD + loss\_mom





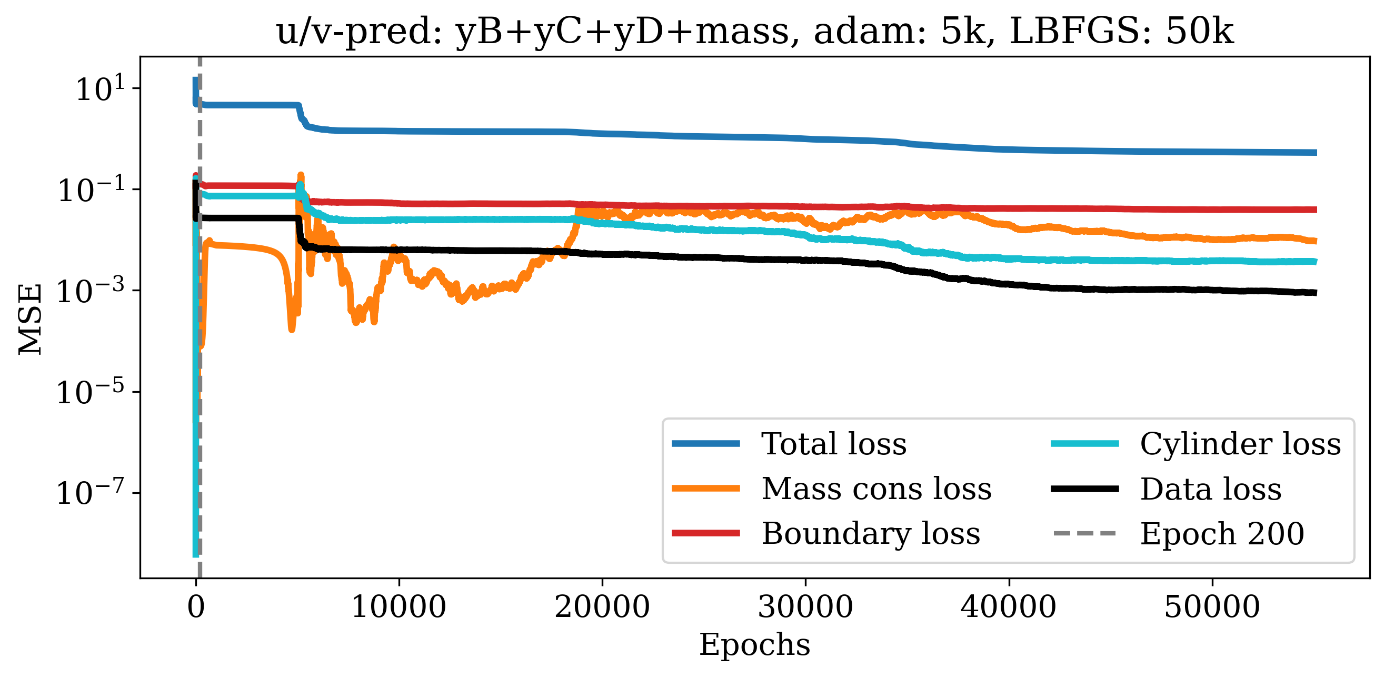
* Mom loss too high

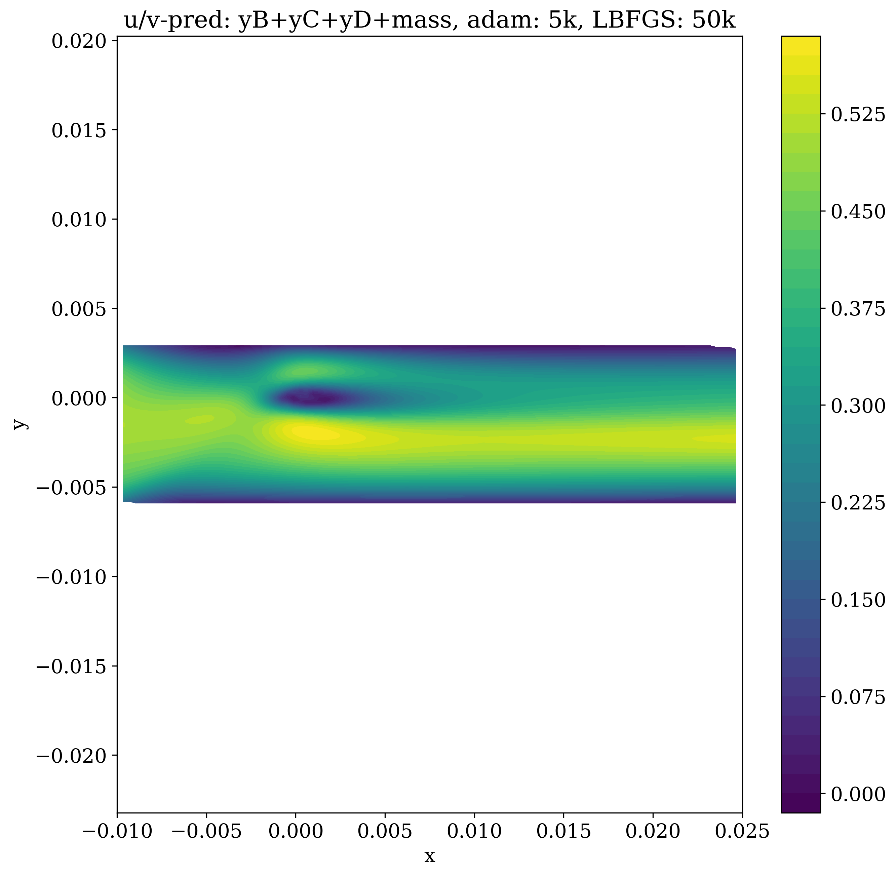
**24-12-17\_1613 (cluster3)**

adam\_iterations = 5000

lbfgs\_max\_iterations = 50000

total\_loss = 10\*yB + 10\*yC + 100\*yD + loss\_mass





* Total loss still converging
* Best velocity profile

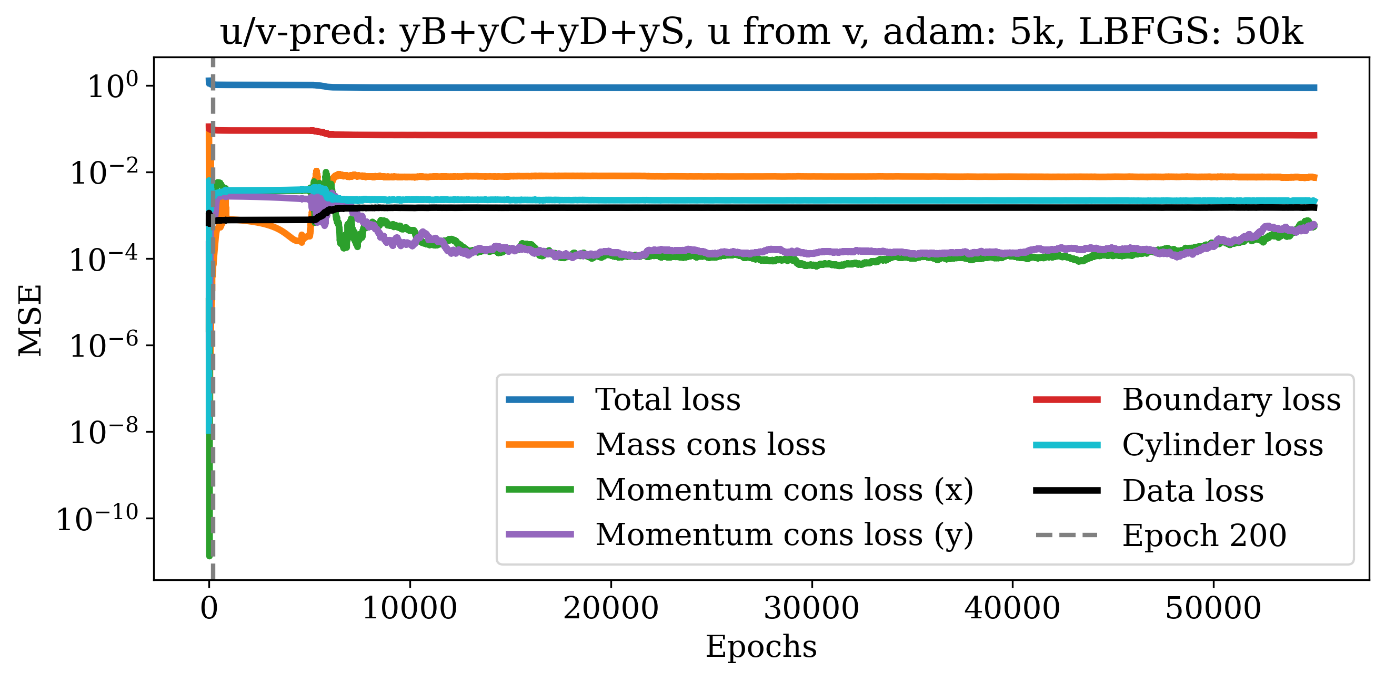
**24-12-17\_1638 (cluster4)**

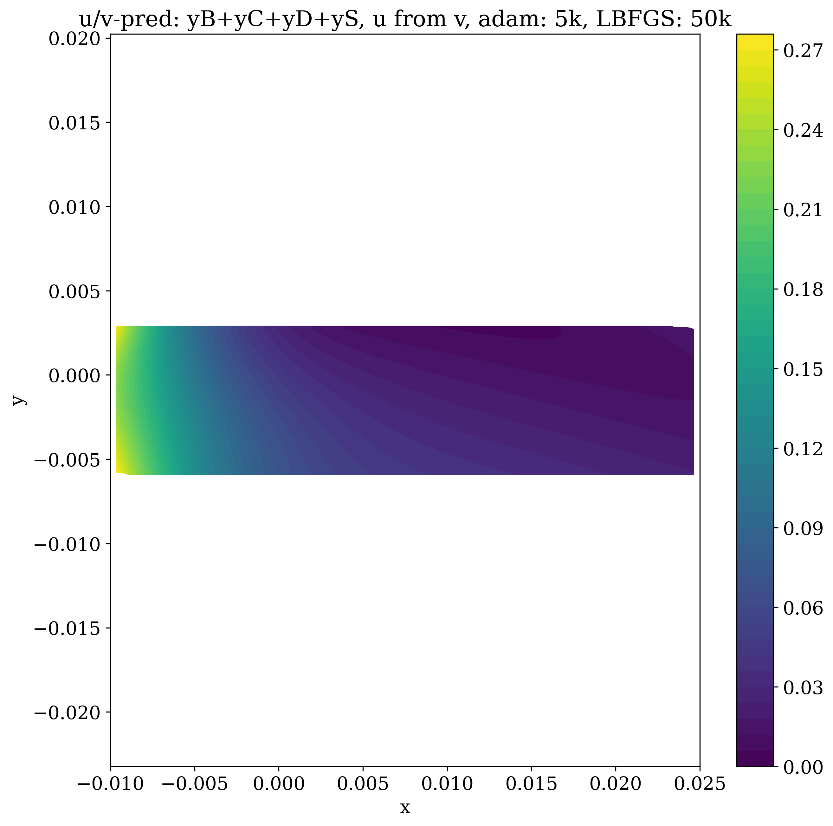
adam\_iterations = 5000

lbfgs\_max\_iterations = 50000

total\_loss = 10\*yB + 10\*yC + 100\*yD +yS







* + 1. , 2:22

Adam: 5000

LBFGS: 50000

* Now dimensionless
* Adjusted inlet velocity u\_inlet, taken from data

Cluster 1:

* full loss

Cluster2:

* only mass

Cluster3:

* only mom

Cluster4:

* mass only
* v from u\_data only
* 85k