Nek5000 log

Introduction:

This document includes all the details and steps needed to run the nek5000 pipe_STAT case. The case is for a periodic smooth pipe turbulent flow at a frictional Reynolds number of 550.

https://github.com/KTH-Nek5000/KTH_Examples/tree/master/pipe_STAT

The simulations were run on the University of Manchester's CSF3 supercomputing facilities.

How to compile Nek5000:

clone repo

```
git clone https://github.com/KTH-Nek5000/KTH_Framework.git
cd KTH_Framework
git submodule update --init –recursive
```

load modules

```
module avail 2>&1 | grep -i mpi
module load mpi/gcc/openmpi/4.1.6
```

those depend on machine

run: module avail <keyword> to find available modules

to compile

```
compile_script --all
```

Changes in scripts:

For gmsh – similarly to nekRS steps

edit in SIZE

```
parameter (lelg=900)
parameter (lelt=lelg/number_of_processors)
```

in SESSION.NAME

```
turbPipe
path/to/pipe_STAT
```

edit turbPipe.par similarly to the nekRS case

Visualise results:

tail logfile.out and squeue to monitor results
runtime statistics can be obtained and analysed from end of logfile.out

results can be obtained by running visnek in the directory and visualizing the turbPipe.nek5000 metadata on ParaView