BIT1 in-situ visualisation demonstration on VEGA using parallel I/O (openPMD+ADIOS2)

1. Get work files:
   ```
   cp -R /ceph/hpc/home/costeas/workshop ./
   cd workshop
   ```

2. Initialise environment:
   ```
   source init.sh
   ```

3. Run BIT1 with streaming:

   a. Open SLURM file, add `--streaming` at the end of **SRUN** command if needed:
   ```
   nano slurm.slm
   [CTRL+O to save, CTRL+X to exit]
   ```

   b. Submit job to HPC VEGA:
   ```
   sbatch slurm.slm
   ```

   c. Check if the job started running:
   ```
   squeue -u $USER
   ```

   d. Connect Python script to visualise simulation data (only while code is running):
   ```
   python in-situ-vis.py bit1_input.inp.sst
   ```

   e. Interrupt visualisation
   ```
   [click on terminal]
   CTRL+C
   ```

   f. Interrupt simulation
   ```
   [read job_ID from squeue -u $USER]
   scancel job_ID
   ```

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4. Run BIT1 with file I/O (i.e. without streaming):

    a. Open SLURM file, **remove --streaming** from the end of **SRUN** command
       if needed:
       nano slurm.slm
       [CTRL+O to save, CTRL+X to exit]

    b. Submit job to HPC VEGA:
       sbatch slurm.slm

    c. Check if the job started running:
       squeue -u $USER

    d. Visualise simulation data using Python script:
       python in-situ-vis.py bit1_input.inp.bp4

e. Visualise simulation data using Paraview (simulation finished):
```
paraview
[File > Open > bit1_input.inp.bp4 > ADIOS2CoreImageReader]
[Image dimension > /data/meshes/profiles/n ]
[Time step array > /data/meshes/t_hist ]
[Arrays > deselect all]
[Arrays > select /data/meshes/profiles/n ]
[Apply]
[Filters > Alphabetical > Extract Subset]
[Set >
```
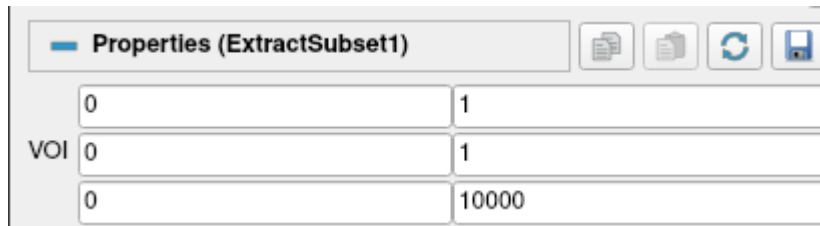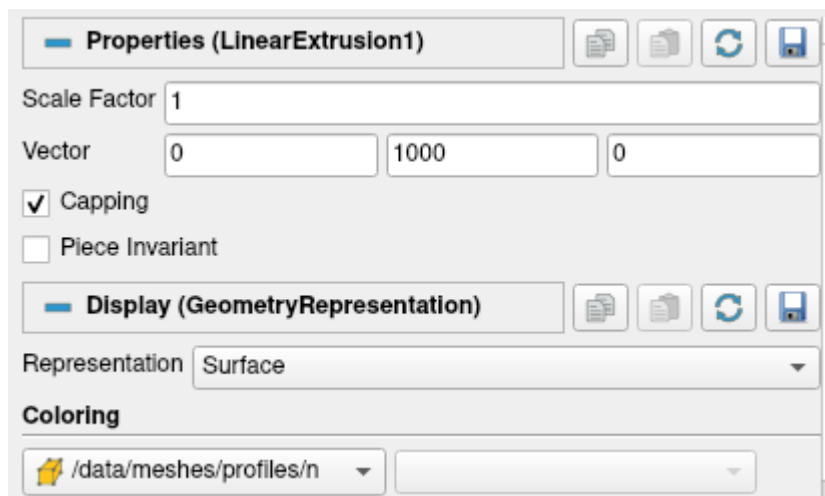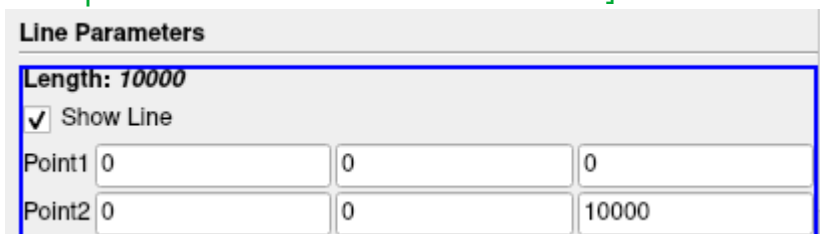


```
[Apply]
[Filters > Alphabetical > Extract Edges]
[Apply]
[Filters > Alphabetical > Linear extrusion]
[Set >
```



```
[Filters > Alphabetical > Plot Over Line]
[Set >
```



```
[Apply]
```