Hands and feet

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CFS

This file: hands\_and\_feet\_001.docx

**Creating an ASCOT input file** (6/10/2022)

Until the recent (April 2022?) ‘upgrade’ at NERSC, all I needed to do was process a script e.g. group\_go\_1943.py thru Python. But now I need to run it on a real node at nersc (probably not a login node) which I do with the my\_salloc command that is defined in my .bashrc.ext file. Also I need to define some environmental variables, that is done by the my\_env command (also defined in my .bashrc file).

The my\_salloc file reserves a node for 60 minutes. When the python script finishes, you can save the remaining time by issuing an scancel command (along with the 8-digit runID).

If you forget to issue the my\_salloc command, you will get an “illegal command” fatal error when you run python

sscott@cori07:/project/projectdirs/m3195/ascot/ascot5/runs> my\_salloc

salloc: Pending job allocation 59999446

salloc: job 59999446 queued and waiting for resources

salloc: job 59999446 has been allocated resources

salloc: Granted job allocation 59999446

salloc: Waiting for resource configuration

salloc: Nodes nid02338 are ready for job

sscott@nid02338:/project/projectdirs/m3195/ascot/ascot5/runs> my\_env

sscott@nid02338:/project/projectdirs/m3195/ascot/ascot5/runs> python group\_go\_1943.py init

**Creating a limiter shape** (6/8/2022)

python $dir\_mypython/triangulate\_torus\_eng\_01.py driver\_shape804.sh > shape804.log

**remy\_today** (6/7/2022)

sscott@cori06:/project/projectdirs/m3195/ascot/ascot5/runs> python $dir\_mypython/remy\_today.py

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enter an optional comment for this postprocessing run:first postprocessing of home-grown engineered PFC

enter comma-separated list (w/o spaces) of ascot output .h5 files forlosses( default=) ascot\_59919240.h5

enter kW of lost alphas (prompt)( default=0.0) 317.

enter kW of lost alphas (non-prompt)( default=0.0) 71.

enter profiles filename( default=v1e\_profiles\_3.txt) <cr>

enter name of geq file( default=v1e.geq) geqdsk\_freegsu\_run0\_mod.geq

enter stub for outout filename (none for outout to screen)( default=remy\_59919240) remy\_eng\_59919240

enter filename for triangles-parameters( default=) shape802\_parameters.txt

enter filename for actual triangle data( default=shape802\_triangles.txt) shape802\_triangles.txt

enter filename for phi extent of antennas and limiters: ( default=sparc\_phiextent\_002.txt) sparc\_phiextent\_003.txt

enter VERTICAL heat-smoothing distance [meters]: ( default=0.0) <cr>

enter HORIZONTAL heat-smoothing distance [meters]: ( default=0.0) <cr>

enter True to suppress toroidal belt limiters ( default=True) <cr>

enter maximum marker (0 for all of them) ( default=0) <cr>

enter starting marker ( default=0) <cr>

enter start time for nonprompt losses: ( default=3e-05) <cr>

enter end time for nonprompt losses: ( default=1e+20) <cr>

enter minimum pitch-angle at start: ( default=-1.0) <cr>

enter maximum pitch-angle at start: ( default=1.0) <cr>

enter minimum pitch-angle at end: ( default=-1.0) <cr>

enter maximum pitch-angle at end: ( default=1.0) <cr>

enter z-offset for equilibrium [m] ( default=0.0) <cr>

enter rmajor-offset for equilibrium [m] ( default=0.0) <cr>

... OK, suppress\_tbl = True

I am about to invoke print\_summary

... run comment: first postprocessing of home-grown engineered PFC

... file\_name: ['ascot\_59919240.h5']

... ploss\_wall\_kw\_p: 317.0

... plosss\_wall\_kw\_np: 71.0

... geq\_name: geqdsk\_freegsu\_run0\_mod.geq

... fn\_profiles: v1e\_profiles\_3.txt

... fn\_phi\_extent: sparc\_phiextent\_003.txt

... stub filename for output: remy\_eng\_59919240

... parameter filename: shape802\_parameters.txt

... triangles filename: shape802\_triangles.txt

... suppress\_tbl: True

... max\_markers: 0

... pnp\_time 3e-05

... pitchini\_min -1.0

... pitchini\_max 1.0

... pitchend\_min -1.0

... pitchend\_max 1.0

... z\_offset\_equilibrium 0.0

... r\_offset\_equilibrium 0.0

... sigma\_heat\_meters\_vertical 0.0

... sigma\_heat\_meters\_horizontal 0.0

... print\_summary starting at time: Tue Jun 7 08:50:58 2022

... print\_summary: stub\_filename = 59919240

... print\_summary: stub = remy\_eng\_59919240

... Processing will take about 90 minutes. If it takes longer,

consider defining stub as none to force output to screen

**Exporting h5 data to vtp format** (for use by Paraview and the HEAT code)

sscott@cori01:/project/projectdirs/m3195/ascot/ascot5/runs> copy\_to\_runs 59919240

sscott@cori01:/project/projectdirs/m3195/ascot/ascot5/runs> python $dir\_mypython/export\_single\_pnpfile\_vtp.py

Enter name of hdf5 file with prompt and nonprompt losses: ( default=) ascot\_59919240.h5

Enter total prompt power loss (kW) ( default=0.0) 317.

Enter total nonprompt power loss (W) ( default=0.0) 71.

Time to separate p and np losses [sec] ( default=3e-05) <cr>

export\_single\_pnpfile\_vtp:

filename with p + np losses: ascot\_59919240.h5

prompt power loss [kW] = 317.0

nonprompt power loss [kW] = 71.0

nonprompt loss start at time = 3e-05

... Your output file will be ascot\_59919240.vtp

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... total reconstructed lost power (MW): 0.3880

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ii spd (MW/m2) (top 50)

0 1.0367 52

1 1.0317 66

2 0.9955 59

3 0.9743 43

4 0.9603 51

5 0.9262 45

6 0.9192 50

7 0.9020 59

8 0.8892 48

9 0.8796 46

10 0.8790 42

11 0.8789 43

12 0.8588 67

13 0.8389 54

14 0.8336 52

15 0.8179 51

16 0.7967 54

17 0.7934 49

18 0.7598 52

19 0.7592 47

20 0.7579 71

21 0.7491 43

22 0.7475 48

23 0.7439 73

24 0.7407 48

25 0.7401 46

26 0.7282 54

27 0.7269 43

28 0.7235 47

29 0.7197 51

30 0.7189 39

31 0.7189 50

32 0.7171 44

33 0.7136 43

34 0.7117 44

35 0.6968 52

36 0.6962 73

37 0.6938 61

38 0.6925 58

39 0.6916 71

40 0.6847 73

41 0.6829 40

42 0.6775 36

43 0.6774 45

44 0.6724 61

45 0.6701 70

46 0.6700 39

47 0.6696 59

48 0.6665 44

49 0.6660 61

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Creating VTK points from triangle vertices.

Points: 43058, Triangles 79988

Creating VTK triangles referencing the points.

Combining the points and triangles to a single VTK PolyData datastructure.

Creating a VTK array representing "Triangle index" and attaching it to the VTK PolyData.

Creating a VTK array representing "Wall load (W/m^2)" and attaching it to the VTK PolyData.

Writing "ascot\_59919240.vtp".

I am done ...