

Handout

Local Machine

Using MPI

It's recommended to run the MPI parts on the cluster. But if you want to use MPI on the local machine, you need to use `~/.julia/bin/mpiexecjl` instead of just `mpirun` or `mpiexec`. For example, to run a MPI program with 4 ranks use

```
~/.julia/bin/mpiexecjl --project -n 4 julia myprogram.jl
```

Hawk Cluster

Note: There is no Internet connection on Hawk.

Logging in

```
ssh userXY@....
```

Julia on Hawk

To make Julia available on Hawk simply type

```
ml julia
```

We've already instantiated the course environment for you such that all Julia packages are available if you run `julia --project` inside of the course folder (`~/JuliaHLRS`).

Interactive compute-node sessions

To get an interactive session on a Hawk compute node run

```
qsub -I -l select=1:node_type=rome -l walltime=01:00:00
```

or `sh get-cpu-node-interactive.sh` within your HOME directory. Here, `-I` indicates interactive mode and the walltime is set to one hour. If you plan to use **MPI**, use the following to get an interactive session or run `sh get-cpu-node-interactive-MPI.sh` in your HOME directory.

```
qsub -I -l select=1:node_type=rome:mpiprocs=128 -l walltime=01:00:00
```

Job submission

If you want to submit a non-interactive job, you first need to create a job file (see example below or `hawk_job.qbs` in your HOME directory).

```
#!/bin/bash
#PBS -N myjob # Change to whatever you like
#PBS -l select=1:node_type=rome
#PBS -l walltime=00:30:00 # 30 minutes - change to whatever necessary.
#PBS -j oe
#PBS -o hawk_job.output

# change to the directory that the job was submitted from
cd $PBS_O_WORKDIR

# load necessary modules
ml r
ml julia

# run program
julia --project yourfile.jl # Change filename
```

To submit this job to the scheduler use `qsub`, e.g. `qsub hawk_job.qbs`. With `qstat -rnw` you can get a list of your scheduled/running jobs.