

Activities in IMP4

- serving turbulence codes as MPI actors to other workflows
- built turbulence CPO for transport/dynamics studies
- built langmuirdiag CPO for edge fluctuation studies
- built HDF5 read/write routines for turbulence
 - code specific part is work in progress
- serving transport modules (small models) to ETS workflows
- work on neoclassic codes in progress (interface issues)
- major progress on HPC2K for HPC workflows in 2011

- IMP4 benchmark case is IMP4 Shot 1/1
 - ASCII file for 4.07b and 4.08b and 4.09a (UAL 4.09a has bugs)

- ITM/IMP4 website now available

- main ITM website

`http://www.efda-itm.eu/`

- main IMP4 website (click on Restricted Area, then IMP4)

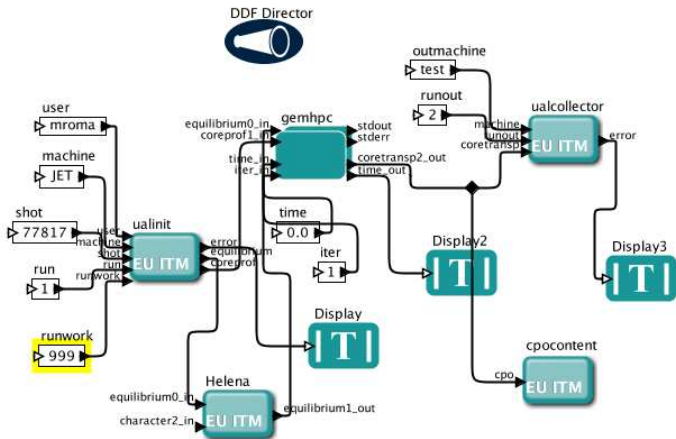
`https://www.efda-itm.eu/ITM/html/imp4_public.html`

- links to files in usual places

`http://home.rzg.mpg.de/~bds/cyclone/`

IMP4 Workflows

- standard test workflow for turbulence/transport actors
 - reads case (JET shot 77817/1 from M Romanelli) from UAL
 - runs equilibrium code HELENA to fill equilibrium CPO
 - runs actor and writes coretransp CPO into UAL

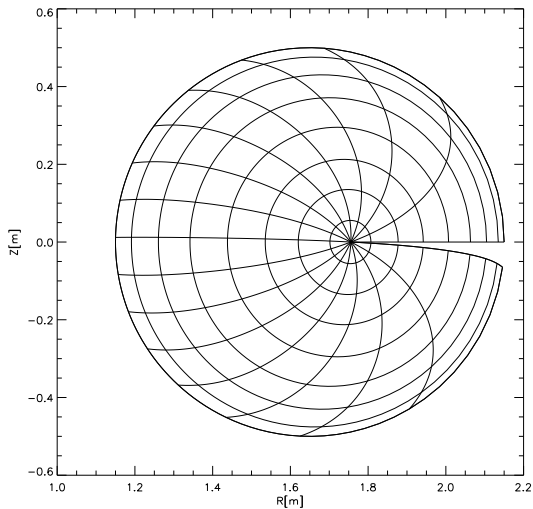


- these work well with standard Kepler setup
- for turbulence codes we require HPCFF
- HPC2K is a system to create relevant actors
 - these submit actor as batch job, await file return
 - job should remain live if workflow is a loop (in progress)
- almost ready to do main physics projects

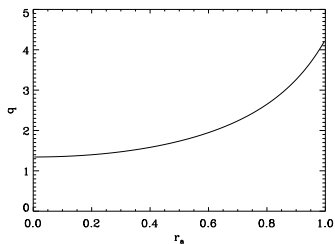
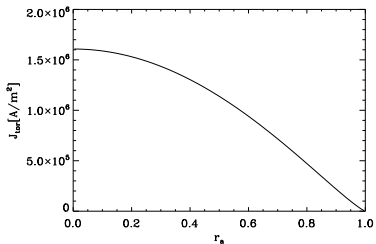
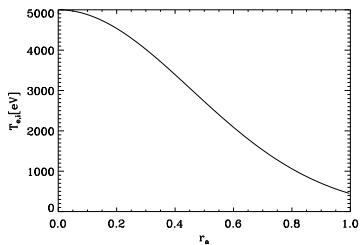
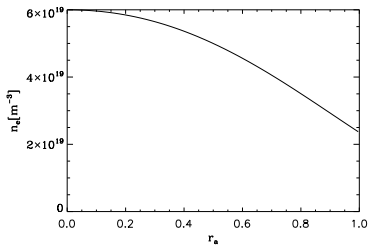
IMP4 Benchmarks

- benchmarking has to stay active for obvious reasons
- case is defined as “tokamak” IMP4 shot/run 1/1
 - CPO coreprof a set of defined profiles
 - HELENA v250 was run to fill CPO equilibrium
- codes read the CPOs via UAL or text file
 - benchmark output is the CPO turbulence
- author responsibility for model description, especially ...
 - equations
 - geometry
 - energy theorem
- ... at least a cite to a derivation for all three
- no code can be supported in ITM without this

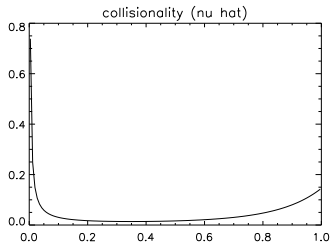
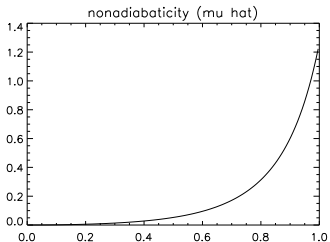
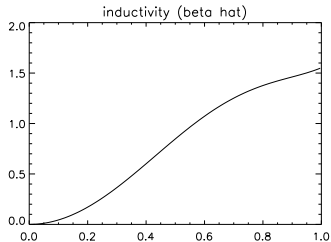
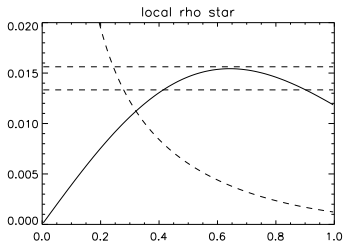
- equilibrium flux surfaces and straight field line angles



- equilibrium profiles (coreprof and equilibrium)



- normalised units



- HPC2K workflows demonstrated with real runs
($> 1\text{K}$ cores 24h)
- IMP4 MPI codes fully capable in ETS workflows

- edge benchmark with strong temperature gradients
- would like a cross benchmark with the MHD project IMP12

- need more participation by neoclassical and linear codes