EUROfusion

Introduction to the ETS-6 in IMAS

David Coster
WPCD WIMAS Area Coordinator
Work Package for Code Development and Integrated Modelling

IPP Max-Planck-Institut für Plasmaphysik

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Outline

- What is IMAS?
- CPOs versus IDSs, EU -> ITER, experimental data
- Comparison: ETS-6 with ETS-5

What is IMAS

- https://imas.iter.org/
  - “ Integrated Modelling & Analysis Suite”
    - a set of physics modelling tools that are executed systematically prior to operation for pulse validation, during the shot for plasma control and live display, and post-shot for comprehensive reconstruction of the plasma from the full collection of diagnostic measurement
- these tools are built on the basis of a set of Interface Data Structures which define in a standardised way the structure of data that will be passed between codes, and the way experimental data should be made available

CPOs versus IDSs, EU -> ITER, experimental data

- Last week we had a training event on ETS5 which is built around CPOs (Consistent Physical Objects), which were developed by the EFDA-TF-ITM and then EUROfusion WPCD
- ITER adopted much of the what the ITM developed but took the opportunity of a fresh start to make some changes, and this resulted in IDSs (Interface Data Structures)
  - allowed for multiple internal time-bases
    - primarily to support experimental diagnostics
  - rather than thinking of a consistent set of data associated with a piece of physics, moved to thinking of collections of data that conceptually belong together
    - coreprof + coreimpur + coreneut + corefast → core_profiles
    - no sources or fluxes in core_profiles → core_transport, core_sources

Comparison: ETS-6 with ETS-5

- When EUROfusion decided to move from CPOs to IDS, we had the opportunity to rethink some of the choices we had made for ETS5 when developing ETS6 (but some changes were also forced on us by the change in philosophy underlying IDSs)
  - cleaned up the workflow
  - moved from rho_tor as the primary grid to rho_tor_norm
- Also benefit from a wider team doing development
  - use some tools developed at ITER or paid for by ITER
- Not all of the physics in ETS5 has yet been ported to ETS6
  - still working on impurities & neutrals
- Some physics should be possible in ETS6 that were not completely supported in ETS5
  - plasma shape and volume changes

Welcome to the ETS6 training

- Opportunity to
  - transfer the skills you have learned in running ETS5 to its successor
  - learn about the new features offered by ETS6