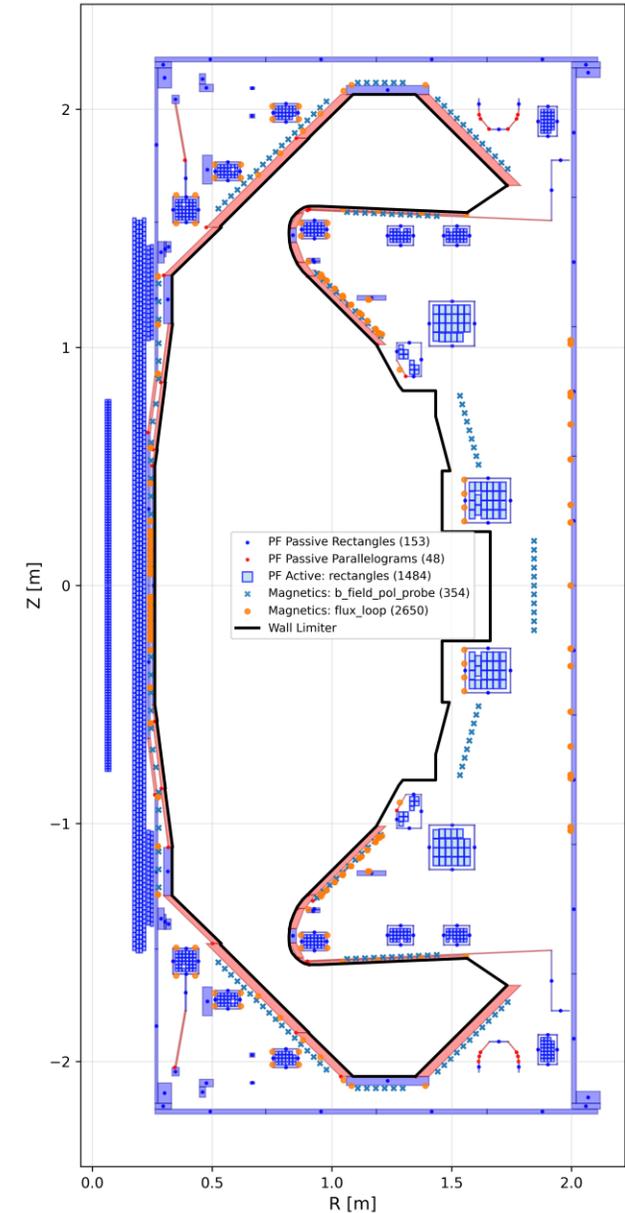**Workshop for Experimental Data Mapping in IMAS**

MAST(-U) Mapping Status

Adam PARKER, Lucy Kogan, Gabor Szepesi
UK Atomic Energy Authority

MAST-U Mapping Status

- **Device name:** MAST-U

- **Native data format/data access library:**
  Primarily NetCDF (via UDA)

- **Contact persons (name + email) for IMAS / Data mapping:**
  Adam Parker - adam.parker@ukaea.uk

- **How is mapping done (manually, via tools/scripts, hardcoded vs mapping):**
  JSON-based mapping files (TokaMap), dynamically mapped on IMAS request

- **Pulses (or ranges of) being mapped:** M4 onwards
  (dynamically mapped so shot dependence handled on the machine side or separate mapping files)

- **Applications that are using the mapped IMAS data:**
  EFIT++, DINA?, Eurofusion DMP Catalogue

- **Data access policy (contact + collaboration + possibility to share test data):**
 5-year embargo, data not readily available externally, could easily be if allowed

Legend:
- PF Passive Rectangles (153)
- PF Passive Parallelograms (48)
- PF Active: rectangles (1484)
- Magnetics: b_field_pol_probe (354)
- Magnetics: flux_loop (2650)
- Wall Limiter

Mappings

	Mapped and validated
	Still to be checked
	Mapping in progress

| IDS Name	Status	Notes
magnetics	🟩	recently COCOS corrected
pf_active	🟩	
pf_passive	🟩	
wall	🟩	efit++ limiter
equilibrium	🟧	weights/constraints info still to be added
dataset_description	🟩	to be removed
pulse_schedule	🟧	
summary	🟧	interpolation/downsample still to implement
tf	🟩	
mse	🟨	
core_sources	🟧	TRANSP (available on request)
core_profiles	🟧	TRANSP (available on request)

Data Dictionary v3.42.0

Future Plans
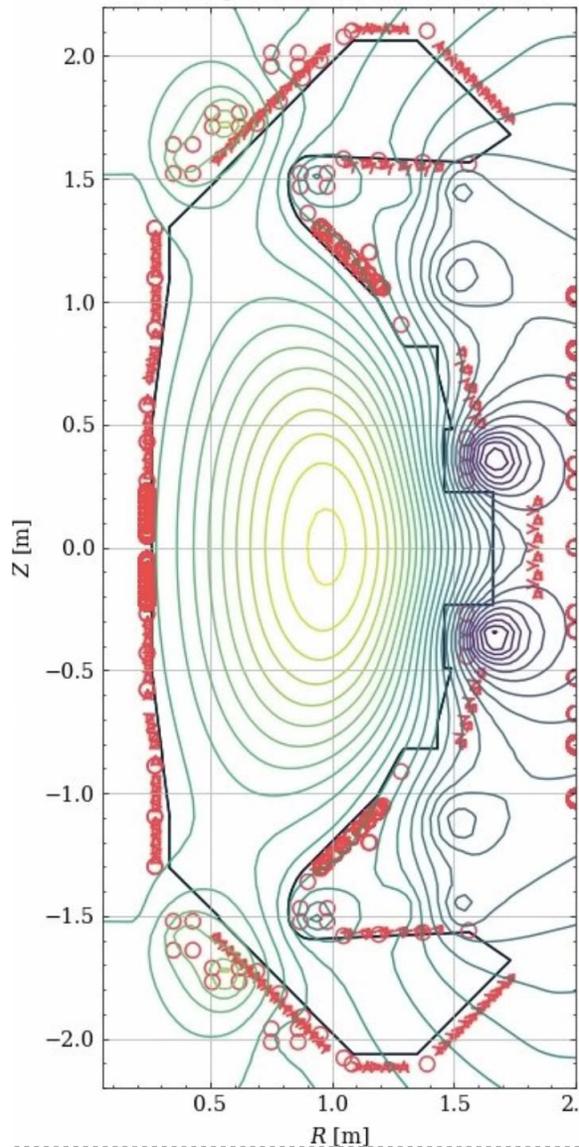
MAST-U Shot 43644 - Magnetics

Flux Loop: F_BL_01 (FLUX_LOOP_1)
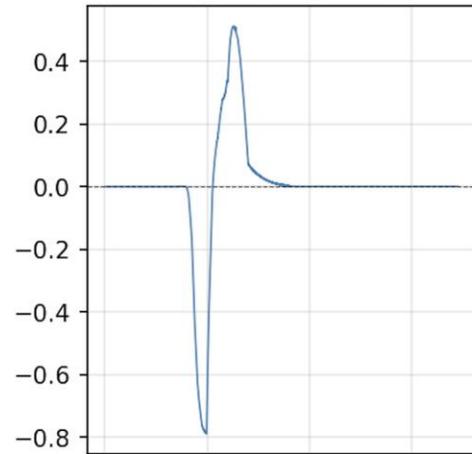
B_pol Probe: B_BL1_N02 (BPOL_PROBE_1)
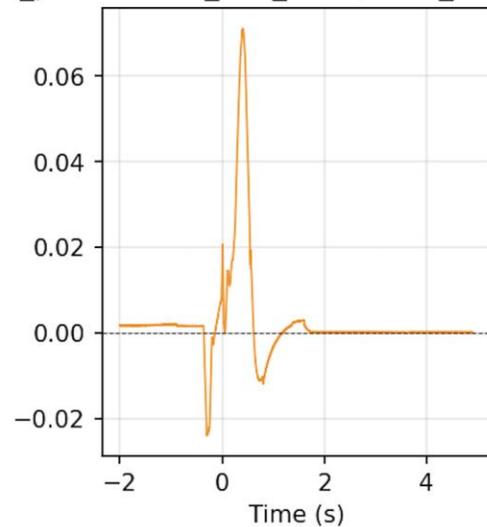
Plans over the coming year

- Performance improvements (targeting 10s per IDS)

- Update mappings to DD v4.0

- Validate with tools/applications

- Geometry calibrations CAD vs. physical locations

- Requests for Bolometry and Interferometry

2026 plan to rework old MAST mappings to TokaMap syntax

MAST Mappings


```
MAGNETICS/BPOL_PROBE/56/POSITION/Z          | EFITMAGXML::get(xmlfile=magnetics.xml, XPath=//magneticProbes/magneticProbe[@id=
MAGNETICS/BPOL_PROBE/56/POSITION/PHI         | EFITMAGXML::put(value=0, type=Double, unique=988)
MAGNETICS/BPOL_PROBE/56/POLOIDAL_ANGLE       | EFITMAGXML::put(value=-1.5707964, type=double, unique=989)
MAGNETICS/BPOL_PROBE/56/TOROIDAL_ANGLE       | EFITMAGXML::put(value=0, type=float, unique=990)
MAGNETICS/BPOL_PROBE/57/POSITION/R           | EFITMAGXML::get(xmlfile=magnetics.xml, XPath=//magneticProbes/magneticProbe[@id=
MAGNETICS/BPOL_PROBE/57/POSITION/Z           | EFITMAGXML::get(xmlfile=magnetics.xml, XPath=//magneticProbes/magneticProbe[@id=
MAGNETICS/BPOL_PROBE/57/POSITION/PHI         | EFITMAGXML::put(value=0, type=Double, unique=993)
MAGNETICS/BPOL_PROBE/57/POLOIDAL_ANGLE       | EFITMAGXML::put(value=-1.5707964, type=double, unique=994)
MAGNETICS/BPOL_PROBE/57/TOROIDAL_ANGLE       | EFITMAGXML::put(value=0, type=float, unique=995)
MAGNETICS/BPOL_PROBE/58/POSITION/R           | EFITMAGXML::get(xmlfile=magnetics.xml, XPath=//magneticProbes/magneticProbe[@id=
MAGNETICS/BPOL_PROBE/58/POSITION/Z           | EFITMAGXML::get(xmlfile=magnetics.xml, XPath=//magneticProbes/magneticProbe[@id=
MAGNETICS/BPOL_PROBE/58/POSITION/PHI         | EFITMAGXML::put(value=0, type=Double, unique=998)
MAGNETICS/BPOL_PROBE/58/POLOIDAL_ANGLE       | EFITMAGXML::put(value=-1.5707964, type=double, unique=999)
MAGNETICS/BPOL_PROBE/58/TOROIDAL_ANGLE       | EFITMAGXML::put(value=0, type=float, unique=1000)
MAGNETICS/BPOL_PROBE/59/POSITION/R           | EFITMAGXML::get(xmlfile=magnetics.xml, XPath=//magneticProbes/magneticProbe[@id=
MAGNETICS/BPOL_PROBE/59/POSITION/Z           | EFITMAGXML::get(xmlfile=magnetics.xml, XPath=//magneticProbes/magneticProbe[@id=
MAGNETICS/BPOL_PROBE/59/POSITION/PHI         | EFITMAGXML::put(value=0, type=Double, unique=1003)
MAGNETICS/BPOL_PROBE/1/FIELD/DATA            | SOURCEX::get(signal="amb_ccbv01", /Data, format=MAST, unique=1101)
MAGNETICS/BPOL_PROBE/1/FIELD/TIME            | SOURCEX::get(signal="amb_ccbv01", /Time, format=MAST, unique=1102)
MAGNETICS/BPOL_PROBE/1/FIELD/DATA_ERROR_UPPER | SOURCEX::get(signal=amb_ccbv01,format=MAST, /Error, absoluteError=0.00030000000,
MAGNETICS/BPOL_PROBE/2/FIELD/DATA            | SOURCEX::get(signal="amb_ccbv02", /Data, format=MAST, unique=1104)
MAGNETICS/BPOL_PROBE/2/FIELD/TIME            | SOURCEX::get(signal="amb_ccbv02", /Time, format=MAST, unique=1105)
MAGNETICS/BPOL_PROBE/2/FIELD/DATA_ERROR_UPPER | SOURCEX::get(signal=amb_ccbv02,format=MAST, /Error, absoluteError=0.00030000000,
MAGNETICS/BPOL_PROBE/3/FIELD/DATA            | SOURCEX::get(signal="amb_ccbv03", /Data, format=MAST, unique=1107)
MAGNETICS/BPOL_PROBE/3/FIELD/TIME            | SOURCEX::get(signal="amb_ccbv03", /Time, format=MAST, unique=1108)
MAGNETICS/BPOL_PROBE/3/FIELD/DATA_ERROR_UPPER | SOURCEX::get(signal=amb_ccbv03,format=MAST, /Error, absoluteError=0.00030000000,
MAGNETICS/BPOL_PROBE/4/FIELD/DATA            | SOURCEX::get(signal="amb_ccbv04", /Data, format=MAST, unique=1110)
MAGNETICS/BPOL_PROBE/4/FIELD/TIME            | SOURCEX::get(signal="amb_ccbv04", /Ti
MAGNETICS/BPOL_PROBE/4/FIELD/DATA_ERROR_UPPER | SOURCEX::get(signal=amb_ccbv04,for
MAGNETICS/BPOL_PROBE/5/FIELD/DATA            | SOURCEX::get(signal="amb_ccbv05",
MAGNETICS/BPOL_PROBE/5/FIELD/TIME            | SOURCEX::get(signal="amb_ccbv05",
```

2026 plan to rework old MAST mappings to TokaMap syntax