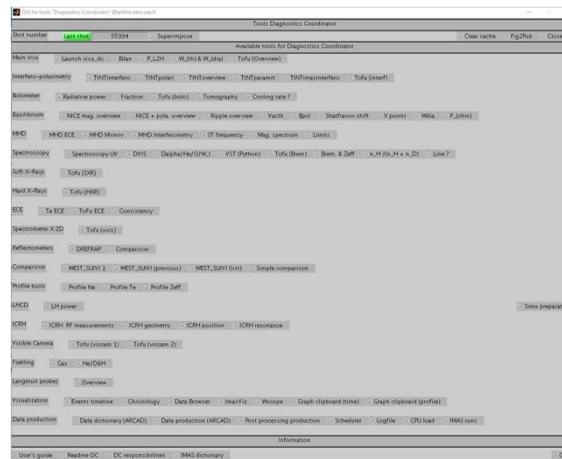


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# GUI FOR DIAGNOSTIC COORDINATOR TOOLS



GUI for DC tools | Jean-François Artaud

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# HOW TO LAUNCH

- On Unix session
  - “module load tools\_dc”
  - “matlab –nodesktop” or “matlab”
  - run\_gui\_dc
  
- Information available on WEST portal:  
<https://westusers.partenaires.cea.fr/group/west/west-data-visualization-gui>
  
- It is just à simple tools aggregator
  - share shot number
  - launch tool just by pushing a button
  
- Tools are provided by many contributors (names given by tooltip)
  
- You can try to push any button to discover what does each tool  
(it is risk-free !)

# MAIN INTERFACE

GUI for tools "Diagnostics Coordinator"@talitha.intra.cea.fr

Tools Diagnostics Coordinator

Shot number  Last shot 55994  Superimpose  Clear cache  Fig2Pub  Close all

Available tools for Diagnostics Coordinator

Main visu  Launch visu\_dc  Bilan  P\_L2H  W\_(th) & W\_(dia)  Tofu (Overview)

Interfero-polarimetry  TINTinterfero  TINTpolari  TINToverview  TINTparamrt  TINTmasinterfero  Tofu (interf)

Bolometer  Radiative power  Fraction  Tofu (bolo)  Tomography  Cooling rate ?

Equilibrium  NICE mag. overview  NICE + pola. overview  Ripple overview  Vacth  Bpol  Shatfranov shift  X points  Wdia  P\_(ohm)

MHD  MHD ECE  MHD Mirnov  MHD Interferometry  ST frequency  Mag. spectrum  Limits

Spectroscopy  Spectroscopy UV  DVIS  Dalpha/He/0/W\_I  VST (Python)  Tofu (Brem)  Brem. & Zeff  n\_H / (n\_H + n\_D)  Line ?

Soft X-Rays  Tofu (SXR)

Hard X-Rays  Tofu (HXR)

ECE  Te ECE  ToFu ECE  Consistency

Spectrometer X 2D  Tofu (xics)

Reflectometers  DREFRAP  Comparison

Comparison  WEST\_SUIVI 1  WEST\_SUIVI (previous)  WEST\_SUIVI (list)  Simple comparison

Profile tools  Profile Ne  Profile Te  Profile Zeff

LHCD  LH power  Simu preparation

ICRH  ICRH RF measurements  ICRH geometry  ICRH position  ICRH resonance

Visible Camera  Tofu (viscam 1)  Tofu (viscam 2)

Fuelling  Gas  He/D&H

Langmuir probes  Overview

Visualisation  Events timeline  Chronology  Data Browser  ImasViz  Wscope  Graph clipboard (time)  Graph clipboard (profile)

Data production  Data dictionary (ARCAD)  Data production (ARCAD)  Post processing production  Scheduler  Logfile  CPU load  IMAS runs

Information

User's guide  Readme DC  DC responsibilities  IMAS dictionary  Quit

# ONE LINE = ONE TOPIC

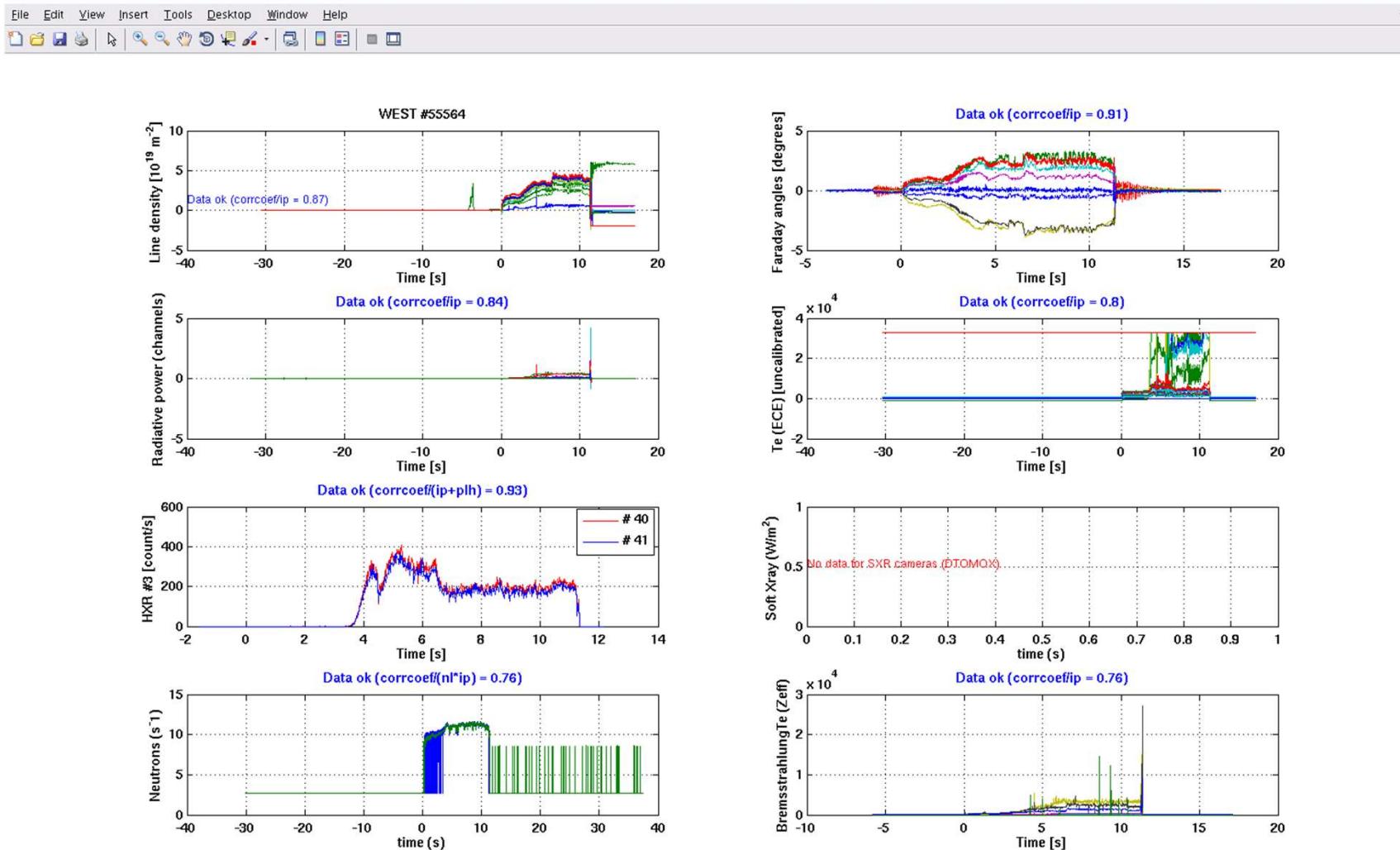
- First button line for shot selection and display control
  - “last shot” select last shot with available data (colored in green = current shot number is the last shot)
  - “superimpose” allows to superimpose data for many shot in Matlab display
  - “clear cache” clears IMAS memory cache to force data update
  - “fig2pub” tries to create nice elementary figure for reporting (works only with Matlab tools)
  - “close all” closes all Matlab figures at once
- Each next line address one topic (detailed in next slides)
- “Data production” tools available only in network zone intra
  - data access needed for these tools are not available in zone partenaires
- Last line gives access to information and closes the GUI
  - User’s guide → this presentation
  - Information for Diagnostic coordinator
  - IMAS dictionary (version use by tools\_dc)
- Tools are also available from Matlab (or Python) command line if needed.

# MAIN TOOLS FOR DIAGNOSTIC COORDINATOR

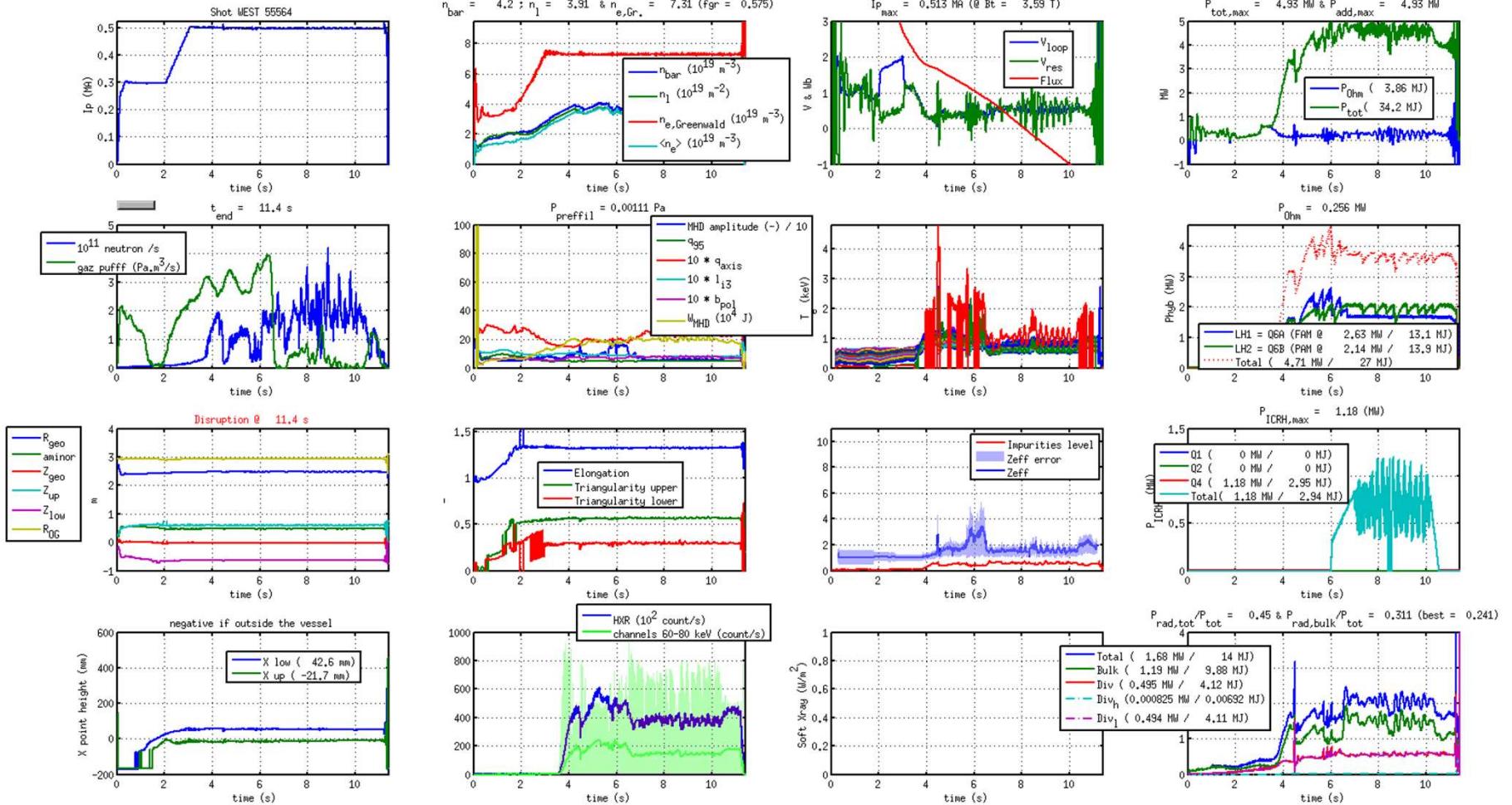
- “Main visu” tools are basics tools for Diagnostic Coordinator activities
  - “Launch visu DC”
    - tool to check data production by main diagnostics
  - “bilan”
    - tool to plot main data useful to fill fields of physics summary
  - “P\_L2H”
    - tool to check if L to H mode transition conditions are fulfilled
  - “Energy”
    - tool computing not directly available data as Ti, plasma composition and thermal energy content

# VISU DC: DIAGNOSTIC DATA MONITORING

Figure 1@talitha.intra.cea.fr

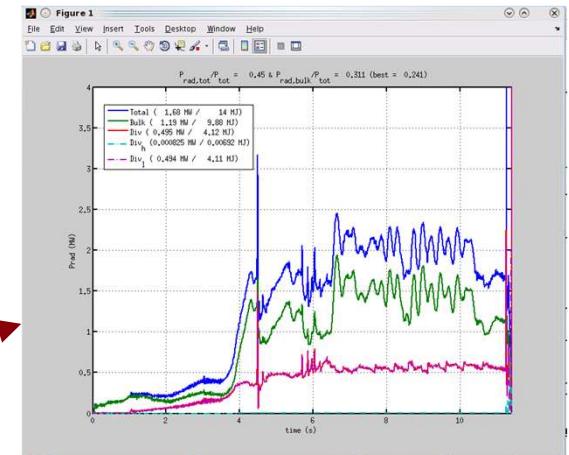
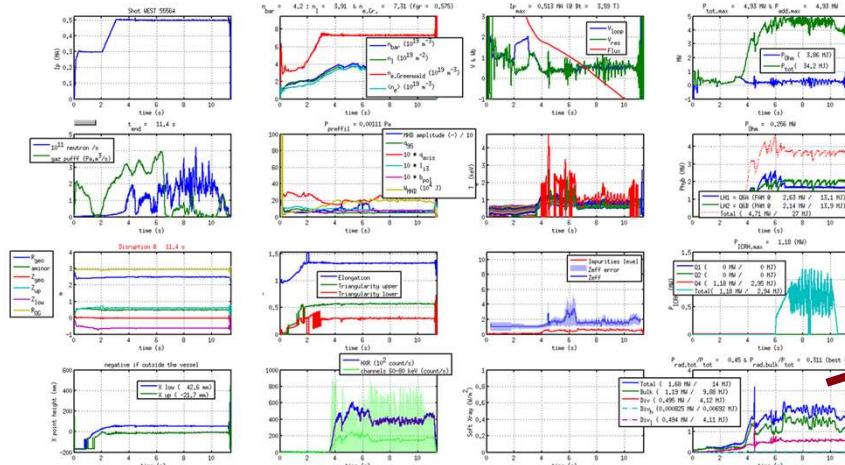


# BILAN: MAIN PARAMETERS DISPLAY

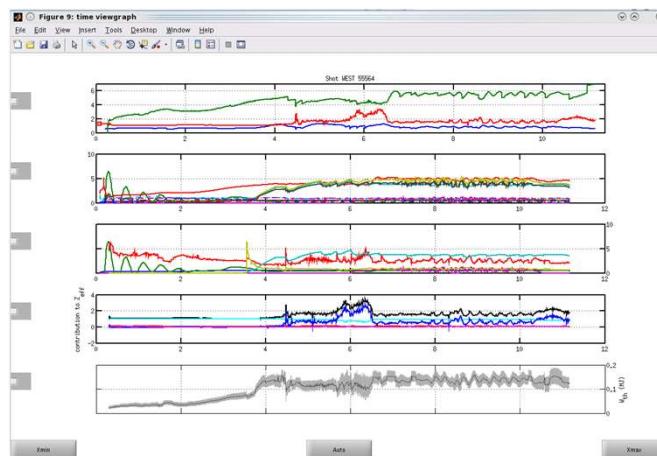


# SOME FEATURES OF MATLAB GRAPH

- All Matlab editing tools are available
- Click on axis expand the graph :



- Curve clipboard are available to accumulate and synchronise curves and profiles:
  - Push button graph clipboard in main interface



## LIST OF TOPICS (1/4)

3. **Interfero-polarimetry**  
→ tools to visualise and assess data produced by interferometry and polarimetry
4. **Bolometer**  
→ tools to visualise bolometer data, radiative power (total, bulk and divertor) and fast (simplified) tomography
5. **Equilibrium**  
→ tools to visualise NICE 2D equilibrium, magnetic ripple maps, Vacth data, ect...
6. **MHD**  
→ tools for MHD studies with ECE, Mirnov coils, interferometry and to display stabilities limits.
7. **Spectroscopy**  
→ tools to visualise VUV and visible spectrometry, bremsstrahlung and assess plasma composition

## LIST OF TOPICS (2/4)

8. **Soft X-Rays**  
→ visualisation of soft X-rays data with Tofu
9. **Hard X-Rays**  
→ visualisation of hard X-rays data with Tofu
10. **ECE**  
→ visualisation of  $T_e$  from ECE, raw data and consistency check between  $T_e$  and q in ohmic phase.
11. **Spectrometer X 2D**  
→ visualisation of raw data of X2D diagnostic with ToFu
12. **Reflectometers**  
→ visualisation of reflectometers electron density profiles and comparison with other density profile identifications
13. **Comparison**  
→ Tools to compare main data between set of shots.

## LIST OF TOPICS (3/4)

14. **Profile tools**  
→ visualisation of indentified/fitted profiles ( $n_e$ ,  $T_e$  &  $Z_{eff}$ )
15. **LHCD**  
→ visualisation of lower hybrid powers (forward/backward) for each launcher
16. **ICRH**  
→ various tools for ICRH (powers & geometry visualisation, ripple)
17. **Visible Camera**  
→ visualisation of movies from visible camera with ToFu
18. **Fuelling**  
→ visualisation of gas injection, pumping and composition
19. **Langmuir probes**  
→ visualisation of raw data from fixe Langmuir probes.

## LIST OF TOPICS: (4/4)

### 20. Visualisation

→ generic tools for data visualization and graph clipboards (Matlab):

events timeline = graphical display of events/triggers time line after shot

chronology = text display of events/triggers time line after shot

data browser = simple tool with menu trees to visualize ARCAD and IMAS data

ImasViz = simple tool to visualize IMAS data

Wscope = Jscope tool adapted to WEST databases

### 21. Data production

→ tools to monitor data production (available only in zone intra network):

data dictionary (ARCAD) = list of diagnostics and list of data for each diagnostic

data production (ARCAD) = size of data for each diagnostic (do not include files)

post processing production = volume of IMAS data produced for each run

scheduler = live view of logfile messages from post processing scheduler

logfile = state of treatments and execution logfile of each treatment

CPU load = Ganglia view of hercule server with various load indicators

IMAS runs = list of available IMAS runs for the current shot

## LAST COMMENTS

- This GUI is in continuous evolution to handle new diagnostic or new tool
- Based on CRONOS/METIS graphical interface generator:  
easy and unexpensive to extend
- You are welcome to provide new tools that we can add in the GUI
- Please report any issues you experience: [jean-francois.artaud@cea.fr](mailto:jean-francois.artaud@cea.fr)
- Tools are also available from Matlab (or Python) command line if needed:
  - request information when you need use a specific tool in a standalone way

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