



# Technical Issues on the International Stellarator/Heliotron Profile Database

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## Outline

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### (1) Steps for developing ISHPDB

- Collection of UFILES on WWW server (ISHPDB t-version, ("toy" or "text"))
- More applicable database with XML schema [7]

### (2) WWW server

- Web server for ISHCDB on NIFS ( <http://iscdb.nifs.ac.jp/> )
- This WWW server is located in the outside of teh firewall of NIFS.

### (3) An Example of Directory structure

### (4) Discussion is needed in order to determine which data to register.

- What kind of data should be delivered to DB.

# The $T_e$ profile data in the 2D-UFILE



```
032940 LHD 2          ;--SHOT # TOK DIMENSIONS- 15-OCT-07
18/01/02             ;--SHOT DATE-  UFILES ASCII FILE SYSTEM
0                   ;--NUMBER OF ASSOCIATED SCALAR QUANTITIES-
RHO                 ;--INDEPENDENT VARIABLE LABEL: X-
TIME                SEC ;--INDEPENDENT VARIABLE LABEL: Y-
TE                 ;--DEPENDENT VARIABLE LABEL-
2                 ;--PROC CODE- 0:RAW 1:AVG 2:SM 3:AVG+SM
                   ;--# OF X PTS-
                   ;--# OF Y PTS- X,Y,F(X,Y) DATA FOLLOW
0.00000e+000 2.00000e-002 4.00000e-002 6.00000e-002 8.00000e-002
1.00000e-001 1.20000e-001 1.40000e-001 1.60000e-001 1.80000e-001
2.00000e-001 2.20000e-001 2.40000e-001 2.60000e-001 2.80000e-001
3.00000e-001 3.20000e-001 3.40000e-001 3.60000e-001 3.80000e-001
4.00000e-001 4.20000e-001 4.40000e-001 4.60000e-001 4.80000e-001
5.00000e-001 5.20000e-001 5.40000e-001 5.60000e-001 5.80000e-001
6.00000e-001 6.20000e-001 6.40000e-001 6.60000e-001 6.80000e-001
7.00000e-001 7.20000e-001 7.40000e-001 7.60000e-001 7.80000e-001
8.00000e-001 8.20000e-001 8.40000e-001 8.60000e-001 8.80000e-001
9.00000e-001 9.20000e-001 9.40000e-001 9.60000e-001 9.80000e-001
1.00000e+000
2.00300e+000
3.55164e+003 3.52288e+003 3.44586e+003 3.33319e+003 3.19583e+003
3.04315e+003 2.88295e+003 2.72161e+003 2.56415e+003 2.41435e+003
2.27484e+003 2.14731e+003 2.03256e+003 1.93069e+003 1.84120e+003
1.76318e+003 1.69537e+003 1.63634e+003 1.58457e+003 1.53853e+003
1.49679e+003 1.45807e+003 1.42130e+003 1.38562e+003 1.35042e+003
1.31532e+003 1.28016e+003 1.24495e+003 1.20986e+003 1.17512e+003
1.14099e+003 1.10771e+003 1.07542e+003 1.04414e+003 1.01373e+003
9.83830e+002 9.53927e+002 9.23343e+002 8.91265e+002 8.56828e+002
8.19197e+002 7.77667e+002 7.31799e+002 6.81488e+002 6.27042e+002
5.69235e+002 5.09313e+002 4.48866e+002 3.89494e+002 3.32426e+002
2.77660e+002
;-----END-OF-DATA-----COMMENTS:-----
modeled profile based on YAG TS data
type of fitting function :
flx file name : lhd-r375q100b016a2020.flx
```

- The file name of 2D-UFILE is 'lhd\_032940\_002003\_2d.dat'.  
When the UFILE contains the time evolution data, it becomes 'lhd\_032940\_2d.dat'.
- The name of the magnetic flux surface data is written in the comment area.

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# The Appearance of "http://iscdb.nifs.ac.jp/"



http://iscdb.nifs.ac.jp/

Under auspices of  
IEA Implementing Agreement for Cooperation in Development of the Stellarator Concept  
(2.10.1992)  
Jointly hosted by the National Institute for Fusion Science  
and the Max-Planck-Institut für Plasmaphysik, EURATOM Association

**International Stellarator/Heliotron  
Confinement Database**

IPP LHD NIFS Laboratorio Nacional de Fusión Asociación EURATOM-CISAT

Heliotron J CHS

NATIONAL PLASMA FUSION RESEARCH FACILITY HSX

⚡ International Stellarator Scaling (ISS) Collaborators  
LHD, W7-AS, TJ-II, CHS, Heliotron J, HSX, and H-1

⚡ Working Files

- This WWW server is located in the outside of the firewall of NIFS. Similar Web servers will be prepared on the other sites.
- Now, the public relations office of NIFS manages this WWW server. The independent machine will be needed in order to run some CGI programs.

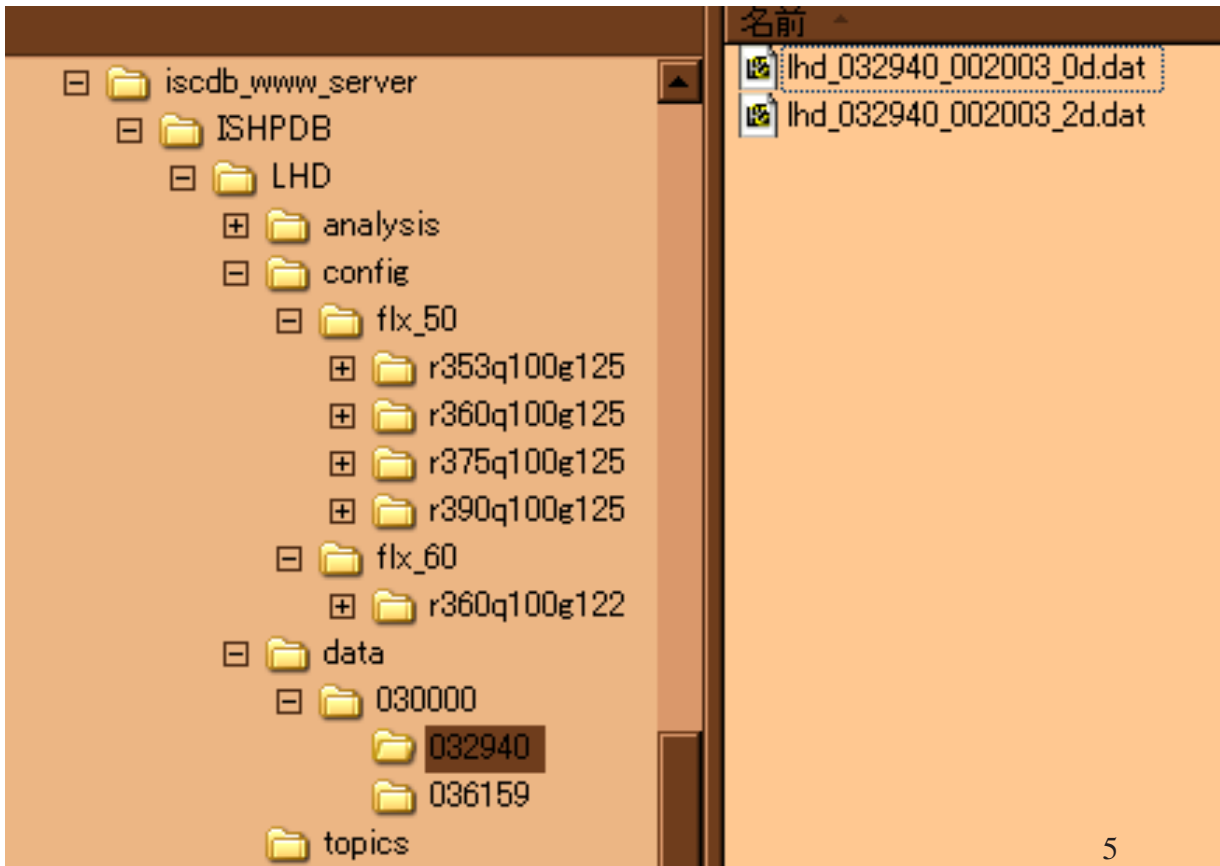
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# An Example of the Directory Structure for ISHPDB



```
/ISHPDB +- /<device> +- /data      --+- /030000 --+- /<shot number> -- 0d, 2d-UFILeS
      |           |           |           :           time trace data
      |           |           |           :           global data
      |           |           |           :           information files
      :           |           +- /070000
      :           +- /config      :
      :           +- /topics
      :           +- /analysis
```



- "config" directory includes the magnetic flux surface data for the mapping.
- "topics" directory includes the list of shot numbers and timings for each topics.
- The structure will be revised during the actual process of data registration.

## Needed Informations for ISHPDB

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- Versions of data

Change of diagnostic analysis (calibration, Abel conversion process, ...)

Real coordinate to  $\rho$

Revision of equilibrium data (VMEC, HINT, ...)

Selection of equilibrium data, Change of fitting, ...

Definition of  $\rho$  or  $\rho = 1$  position should be obviously shown.

Assumptions ( $T_i$ ,  $P_{NBI}$ ,  $P_{rad}$ , ...)

e.g.  $P_{NBI}^{dep} = P_{NBI\ FIT}^{dep} \times P_{NBI\ exp}^{dep} / P_{NBI\ FIT}^{birth}$  is also used.

- Names of the responsible officer (RO)

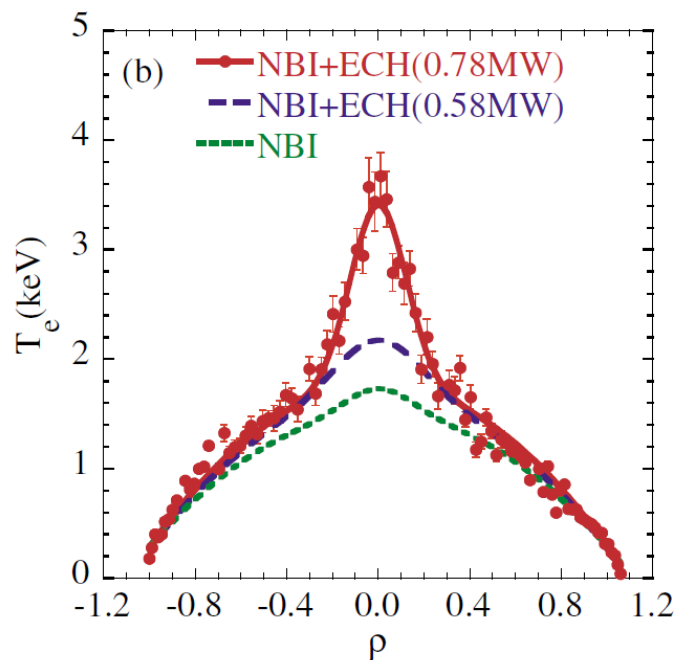
History of registered data

- List for each topics

(device)\_(topic)\_(exp.campaign).lst

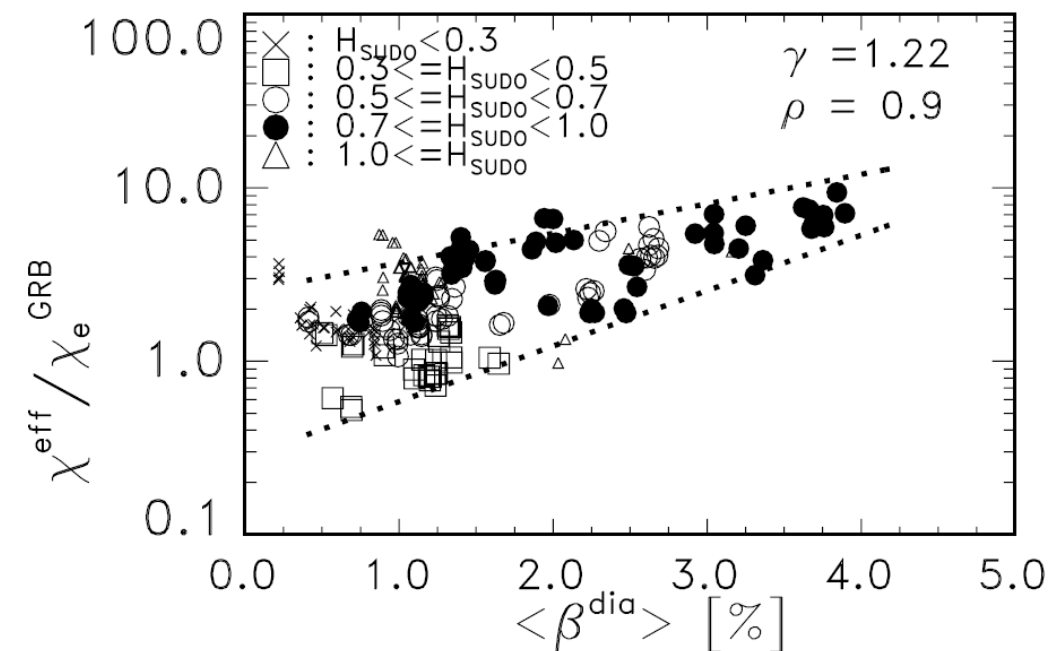
LHD\_CERC\_list.dat, LHD\_all\_2006.dat *etc.*

# What kind of data should be delivered to DB.



(K. Ida, *et.al.*, Phys. Rev. Lett. **91**, (2003) 085003.)

- The profile itself is published in the case of the CERC data.
- For the high-beta data, a few profiles are published while many data are usually used in published figures.
- Discussions are needed on this issue.



# Summary

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- [8] S. Murakami *et al.*, Trans. Fusion Technol.,**27**,256(1995).