XTRANSPIN

VISUAL USER INTERFACE FOR TRANSP

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PPPL

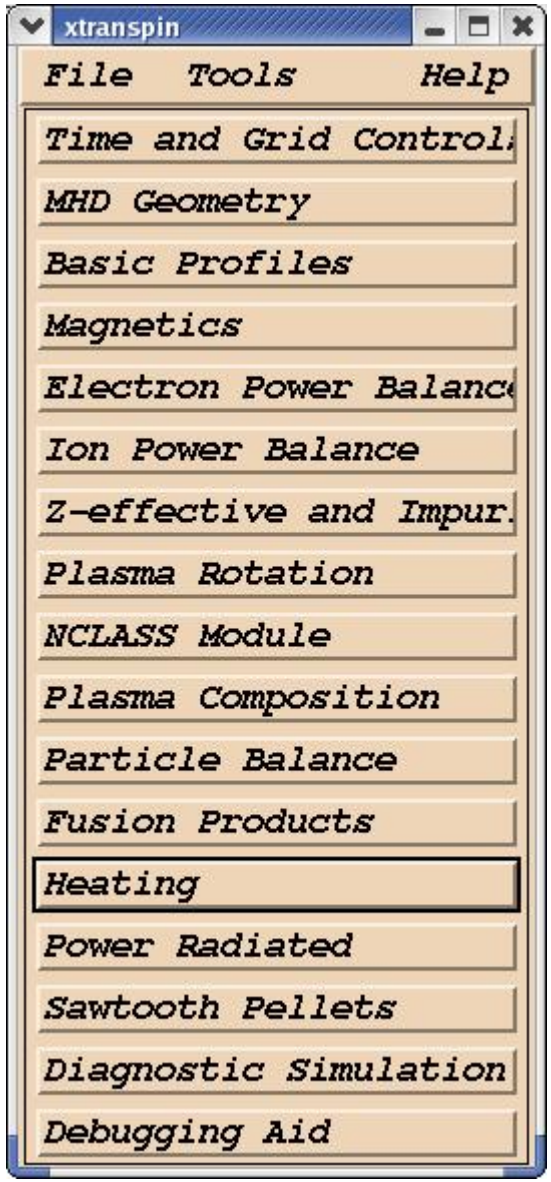
XTRANSPIN

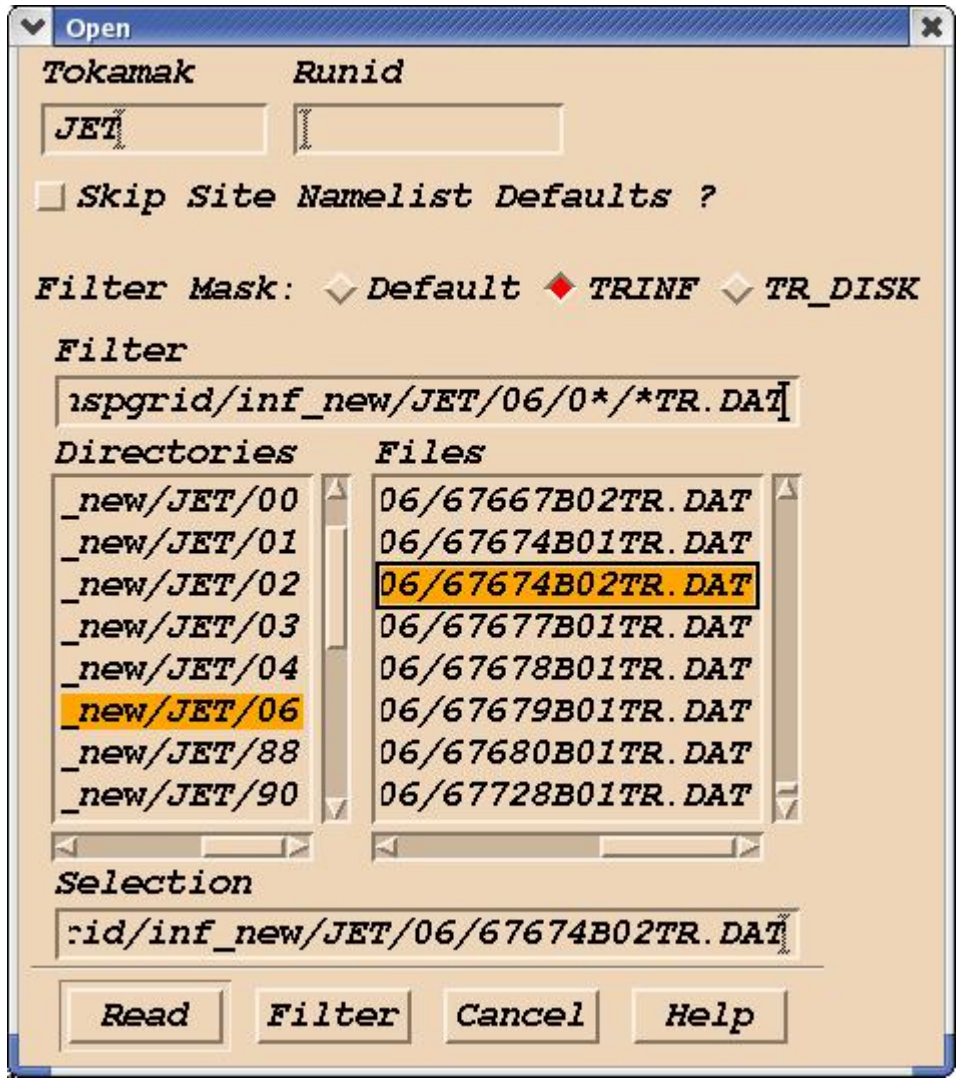
- **XTranspin is a Graphical User Interface that facilitates preparing TRANSP Namelists and submitting runs to the PPPL Compute Server.**
- **Menu-driven, grouped by physics categories analogous to TRANSP Help.**
- **Provides extensive Help features and data-model consistency checks.**

NEW FEATURES

- **Preserves Comments and Formating of User's Namelist**
- **Writes TRANSP Input into MDSplus Tree**
- **Submits Run to TRANSP Fusion Grid Server**
- **Available as NTCC module from http://w3.pppl.gov/NTCC/Tr_Client**

MENU


xtranspin
File
Tools
Help
Time and Grid Control
MHD Geometry
Basic Profiles
Magnetics
Electron Power Balanc
Ion Power Balance
Z-effective and Impur.
Plasma Rotation
NCLASS Module
Plasma Composition
Particle Balance
Fusion Products
Heating
Power Radiated
Sawtooth Pellets
Diagnostic Simulation
Debugging Aid


Open
Tokamak
Runid
JET
Skip Site Namelist Defaults ?
Filter Mask:
Default
TRINF
TR_DISK
Filter
ıspgrid/inf_new/JET/06/0*/*TR.DAT
Directories
Files
_new/JET/00
_new/JET/01
_new/JET/02
_new/JET/03
_new/JET/04
_new/JET/06
_new/JET/88
_new/JET/90
06/67667B02TR.DAT
06/67674B01TR.DAT
06/67674B02TR.DAT
06/67677B01TR.DAT
06/67678B01TR.DAT
06/67679B01TR.DAT
06/67680B01TR.DAT
06/67728B01TR.DAT
Selection
:id/inf_new/JET/06/67674B02TR.DAT
Read
Filter
Cancel
Help

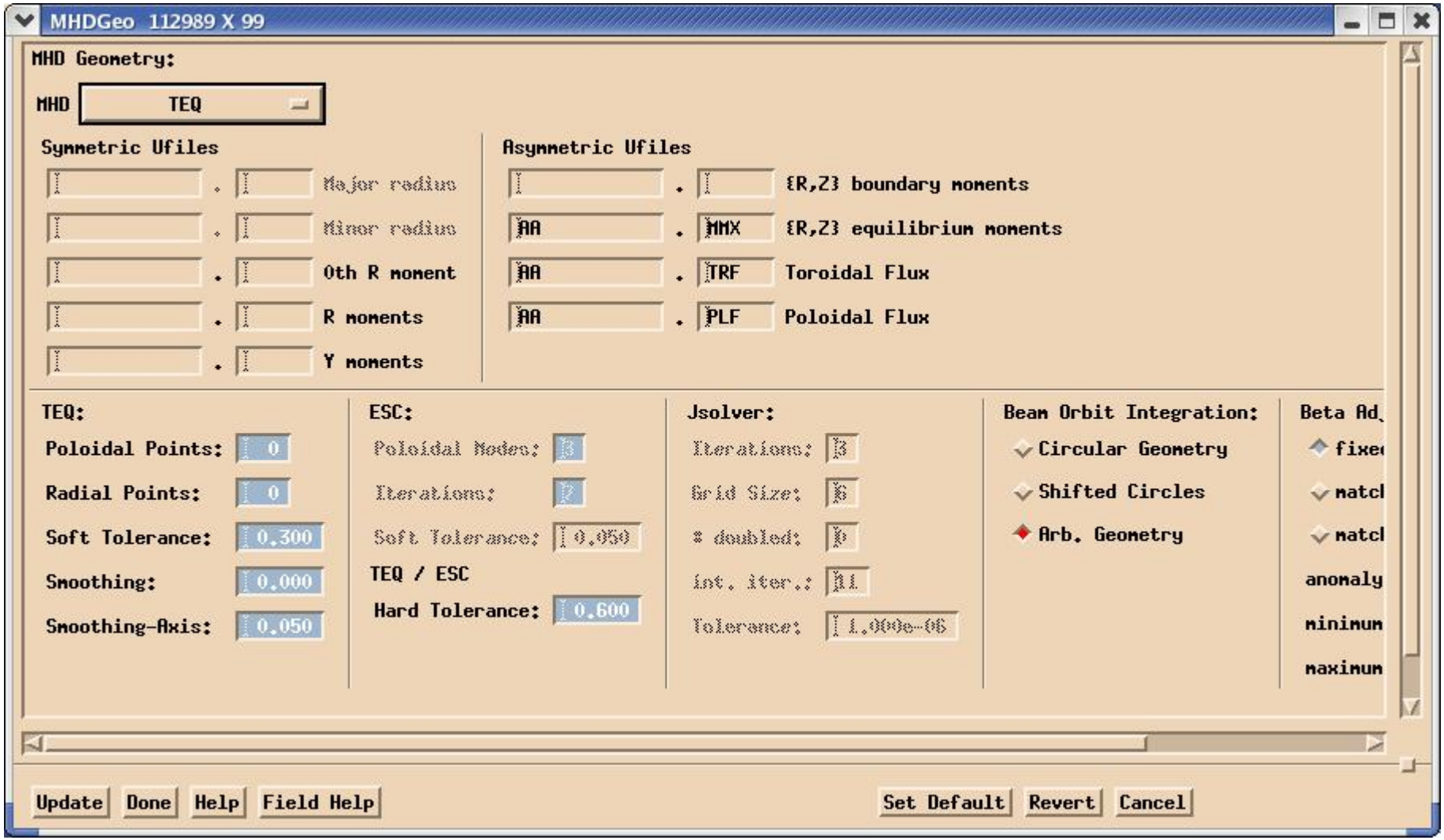
HELP

xtranspin Help

```
Standard XTranspin Buttons:
---------------------------
These buttons are available at the bottom of each main menu.

Update      Check the values, update the variables, and refresh the screen.

Done        Check the values, update the variables, and pop down the screen.

Help        Display the help file associated with this screen.  The help files
            were created from Doug's TRANSP help, but I have ordered the
            information to correspond to XTranspin's menu layout.

FieldHelp   After pushing this button, click on the field you want help with.
            This is a one-liner about the field which is meant to jog your
            memory.  More importantly, it will tell you what variable or
            variables this field sets or controls.

SetDefault  After pushing this button, click on the field you want to set
            to TRANSP's preset value.

Revert      Revert to values BEFORE THE LAST Update or Done.

Cancel      Don't update the variables, pop down the screen.


Dismiss     Popdown the screen.  (Used for help and error screens.)
```

Dismiss

MHD GEOMETRY



MAGNETICS

Magnetics 67674 B 02

Required Ufiles: MG2 . XIP_0 Plasma current | MG3 . VPA_0 Surface Voltage
MAGN . ITOR_ External B field * R

Shared Controls:

Resistivity full NCLASS
modified for R/a < 0.000
Flatten profile:
where q <= 1
where q <= 1.000 eta = 0.000

Bootstrap Cur full NCLASS
smoothed for R/a < 0.100
smoothe 2 inner zones
Smooth Factor: 0
Anomaly Factor: 1.000

Beam Cur Neoclassical
Smooth Factor: 0
LH driven currents
Control on LHHeat Menu
Smooth Factor: 0

Pop up menu for Magnetics Model Initialization

Choose q profile evolution:
single source ? time varying source ?

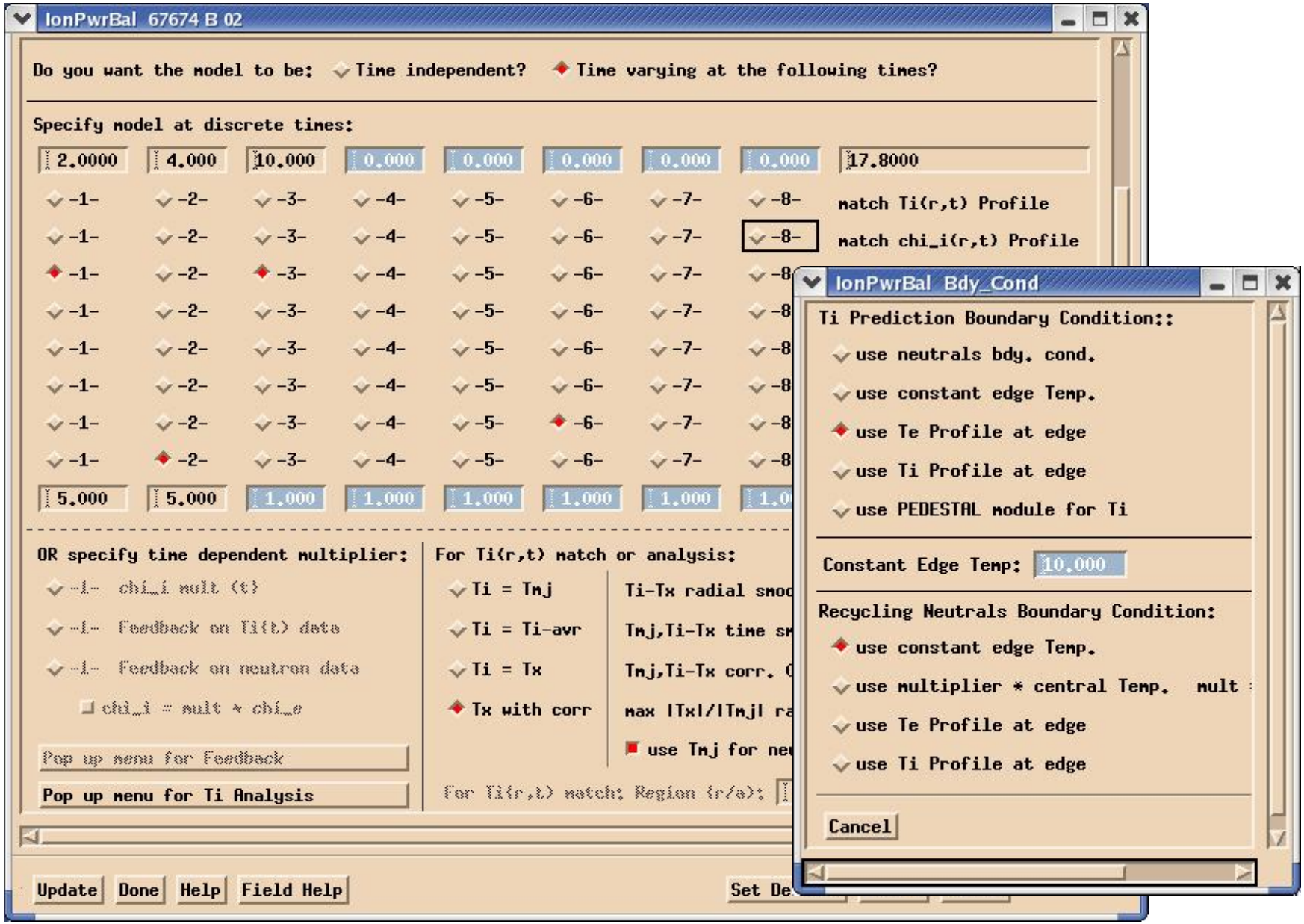
Specify time intervals and q sources: Transition delay: 0.2000

2.000	5.000	0.000	0.000	0.000	0.000	0.000	0.000	17.8000
-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	match Pcur,Zeff; predict q,Vsur
-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	match Pcur,Vsur; predict q,Zeff
-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	match Vsur,Zeff; predict q,Pcur

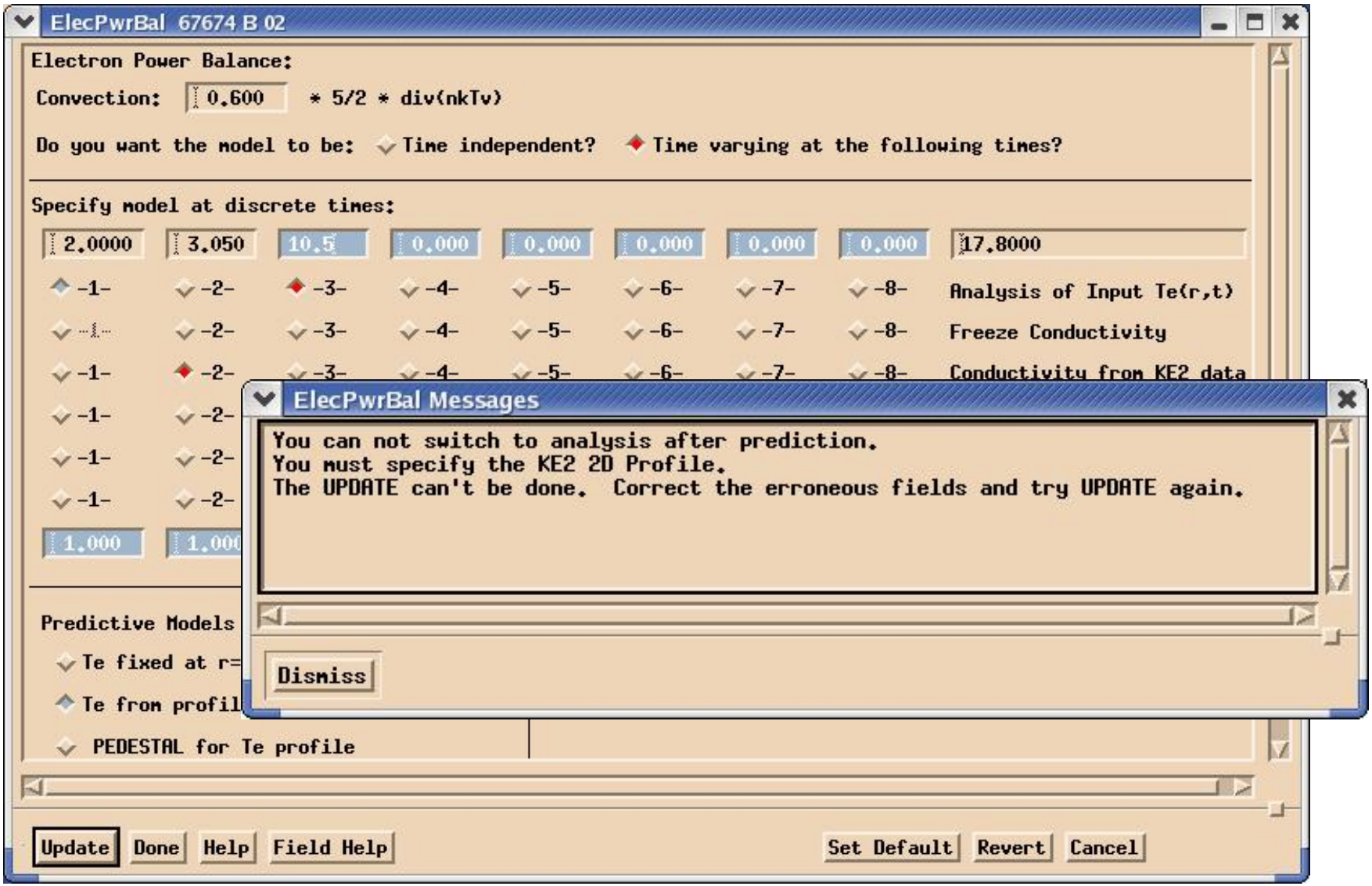
Update Done Help Field Help Set Default Revert Cancel

PLASMA COMPOSITION

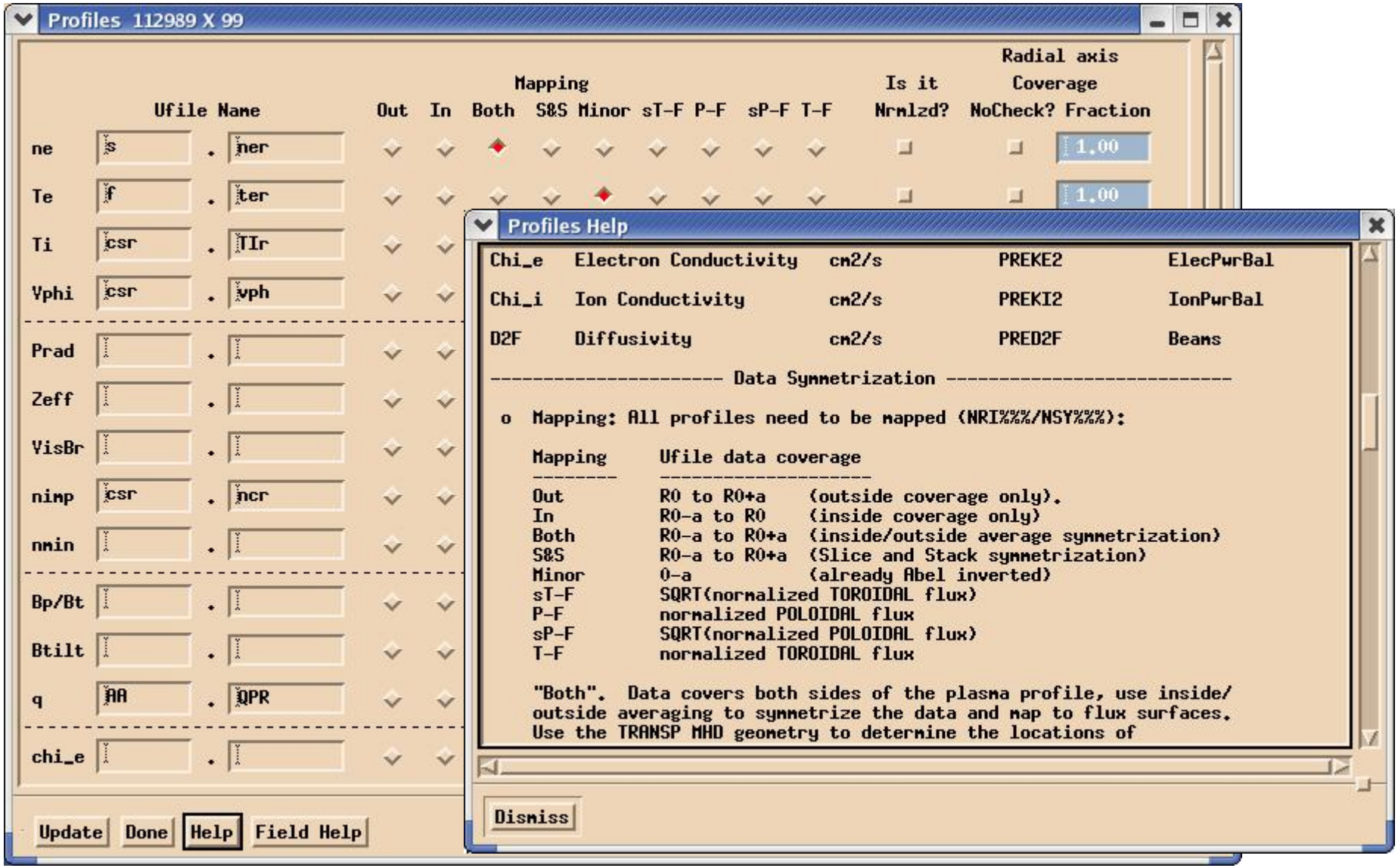
ION POWER BALANCE



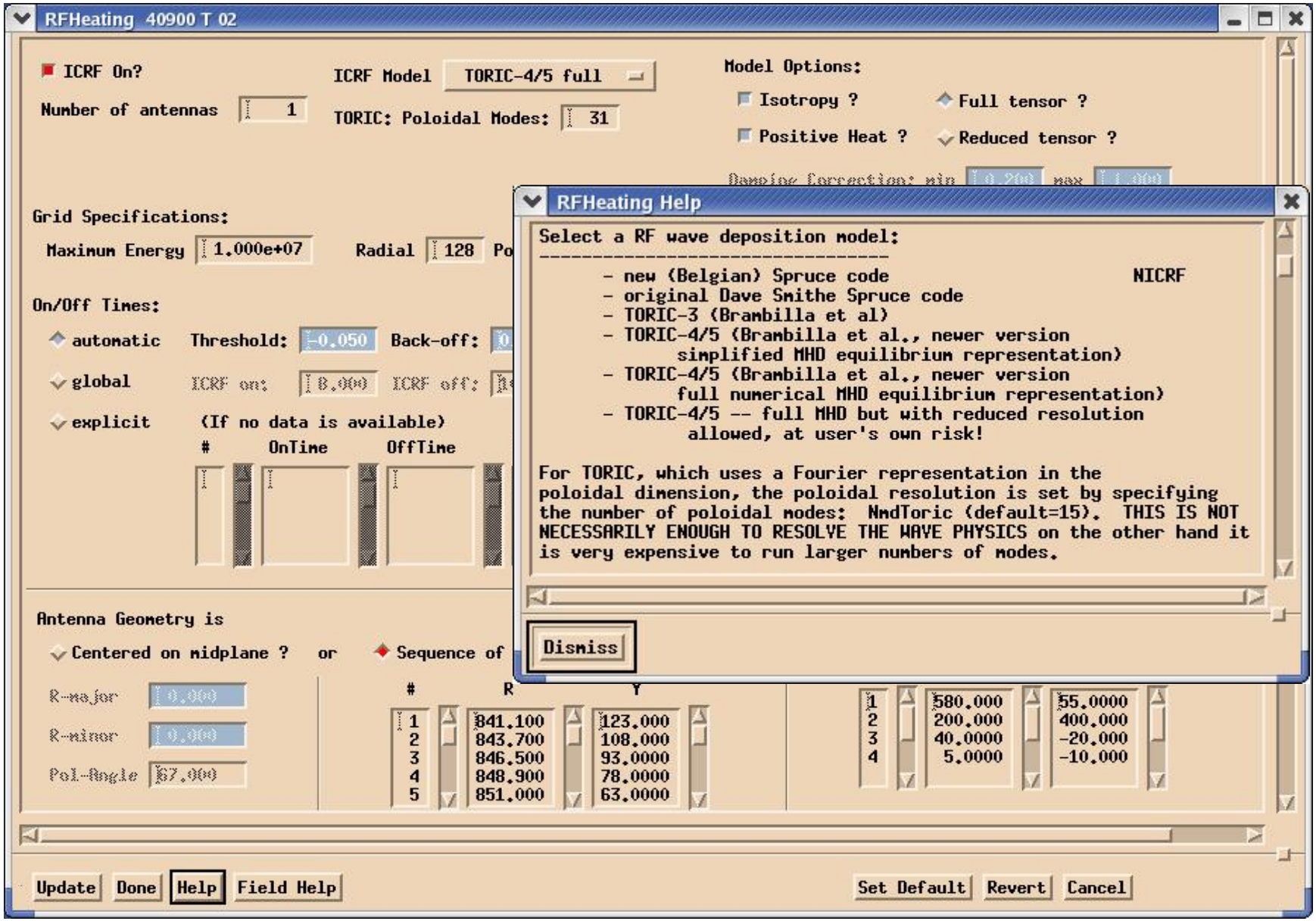
ELECTRON POWER BALANCE



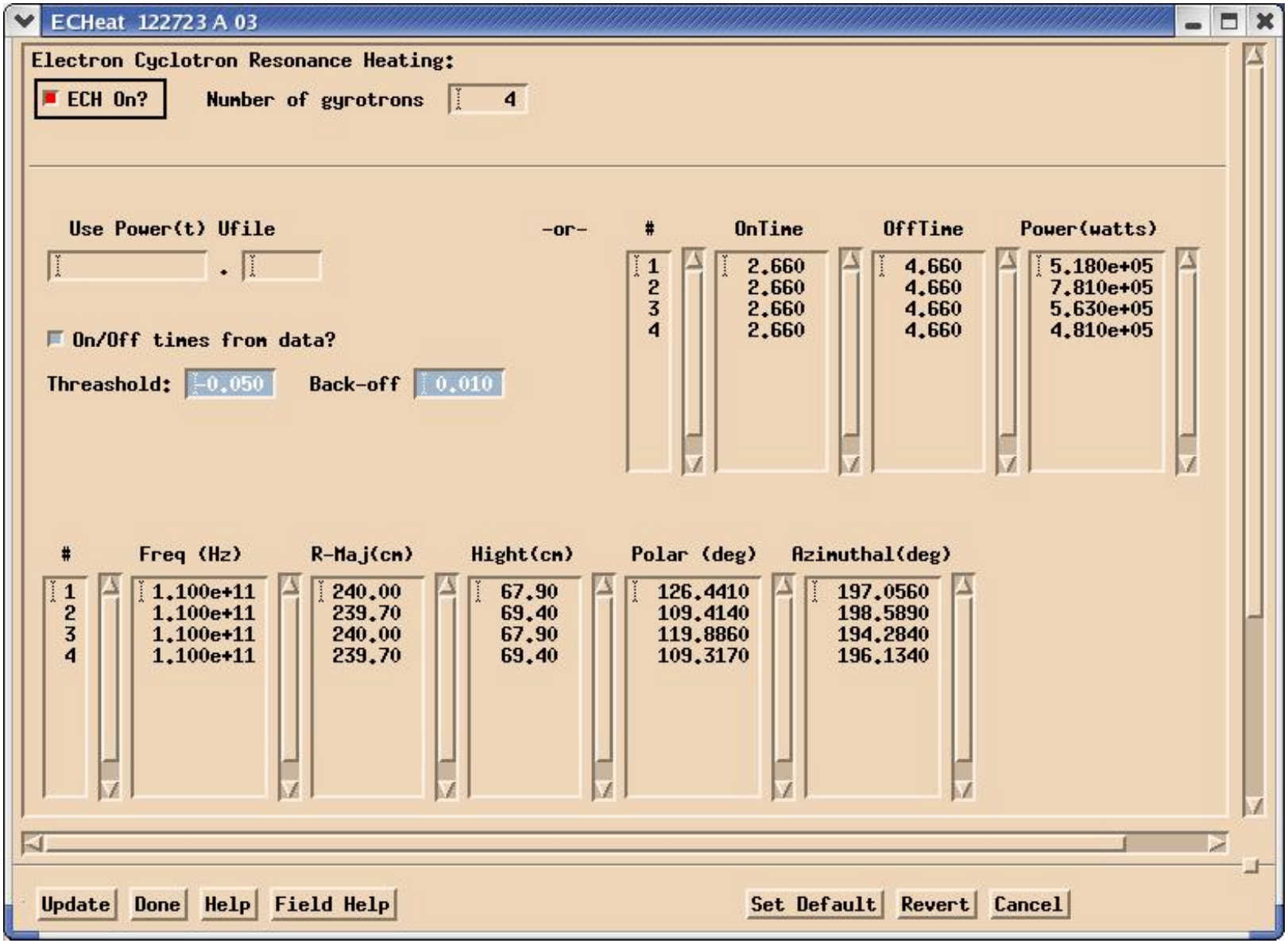
PROFILES


Profiles 112989 X 99
Ufile Name
Mapping
Out In Both S&S Minor sT-F P-F sP-F T-F
Is it Nrmlzd?
Radial axis Coverage NoCheck? Fraction
ne s . ner 1.00
Te f . ter 1.00
Ti csr . TIr
Vphi csr . vph
Prad
Zeff
VisBr
nimp csr . ncr
nmin
Bp/Bt
Btilt
q AA . QPR
chi_e
Update Done Help Field Help
Profiles Help
Chi_e Electron Conductivity cm2/s PREKE2 ElecPwrBal
Chi_i Ion Conductivity cm2/s PREKI2 IonPwrBal
D2F Diffusivity cm2/s PRED2F Beams
Data Symmetrization
o Mapping: All profiles need to be mapped (NRI%%%/NSY%%%):
Mapping Ufile data coverage
Out R0 to R0+a (outside coverage only).
In R0-a to R0 (inside coverage only)
Both R0-a to R0+a (inside/outside average symmetrization)
S&S R0-a to R0+a (Slice and Stack symmetrization)
Minor 0-a (already Abel inverted)
sT-F SQRT(normalized TOROIDAL flux)
P-F normalized POLOIDAL flux
sP-F SQRT(normalized POLOIDAL flux)
T-F normalized TOROIDAL flux
"Both". Data covers both sides of the plasma profile, use inside/outside averaging to symmetrize the data and map to flux surfaces. Use the TRANSP MHD geometry to determine the locations of
Dismiss

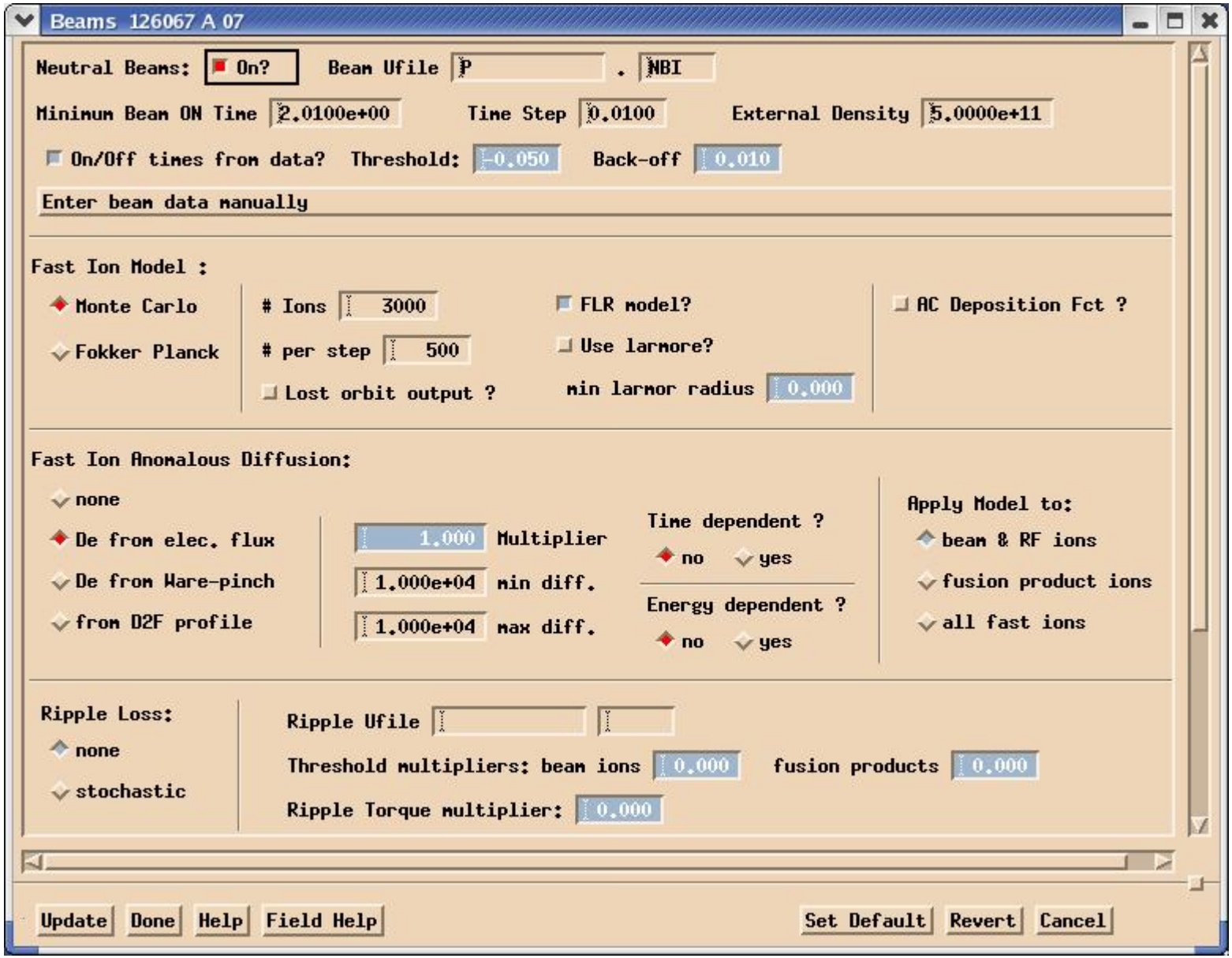
RF-HEATING


RFHeating 40900 T 02
ICRF On?
ICRF Model
TORIC-4/5 full
Number of antennas
1
TORIC: Poloidal Modes:
31
Model Options:
Isotropy ?
Full tensor ?
Positive Heat ?
Reduced tensor ?
Grid Specifications:
Maximum Energy
1.000e+07
Radial
128
On/Off Times:
automatic
Threshold:
-0.050
Back-off:
global
ICRF on:
8.000
ICRF off:
explicit
(If no data is available)
#
OnTime
OffTime
Antenna Geometry is
Centered on midplane ?
or
Sequence of
R-major
R-minor
Pol-Angle
67.000
#
R
Y
1 841.100 123.000
2 843.700 108.000
3 846.500 93.0000
4 848.900 78.0000
5 851.000 63.0000
1 580.000 55.0000
2 200.000 400.000
3 40.0000 -20.000
4 5.0000 -10.000
RFHeating Help
Select a RF wave deposition model:
- new (Belgian) Spruce code
NICRF
- original Dave Smithe Spruce code
- TORIC-3 (Brambilla et al)
- TORIC-4/5 (Brambilla et al., newer version
simplified MHD equilibrium representation)
- TORIC-4/5 (Brambilla et al., newer version
full numerical MHD equilibrium representation)
- TORIC-4/5 -- full MHD but with reduced resolution
allowed, at user's own risk!
For TORIC, which uses a Fourier representation in the
poloidal dimension, the poloidal resolution is set by specifying
the number of poloidal modes: NmdToric (default=15). THIS IS NOT
NECESSARILY ENOUGH TO RESOLVE THE WAVE PHYSICS on the other hand it
is very expensive to run larger numbers of modes.
Dismiss
Update
Done
Help
Field Help
Set Default
Revert
Cancel

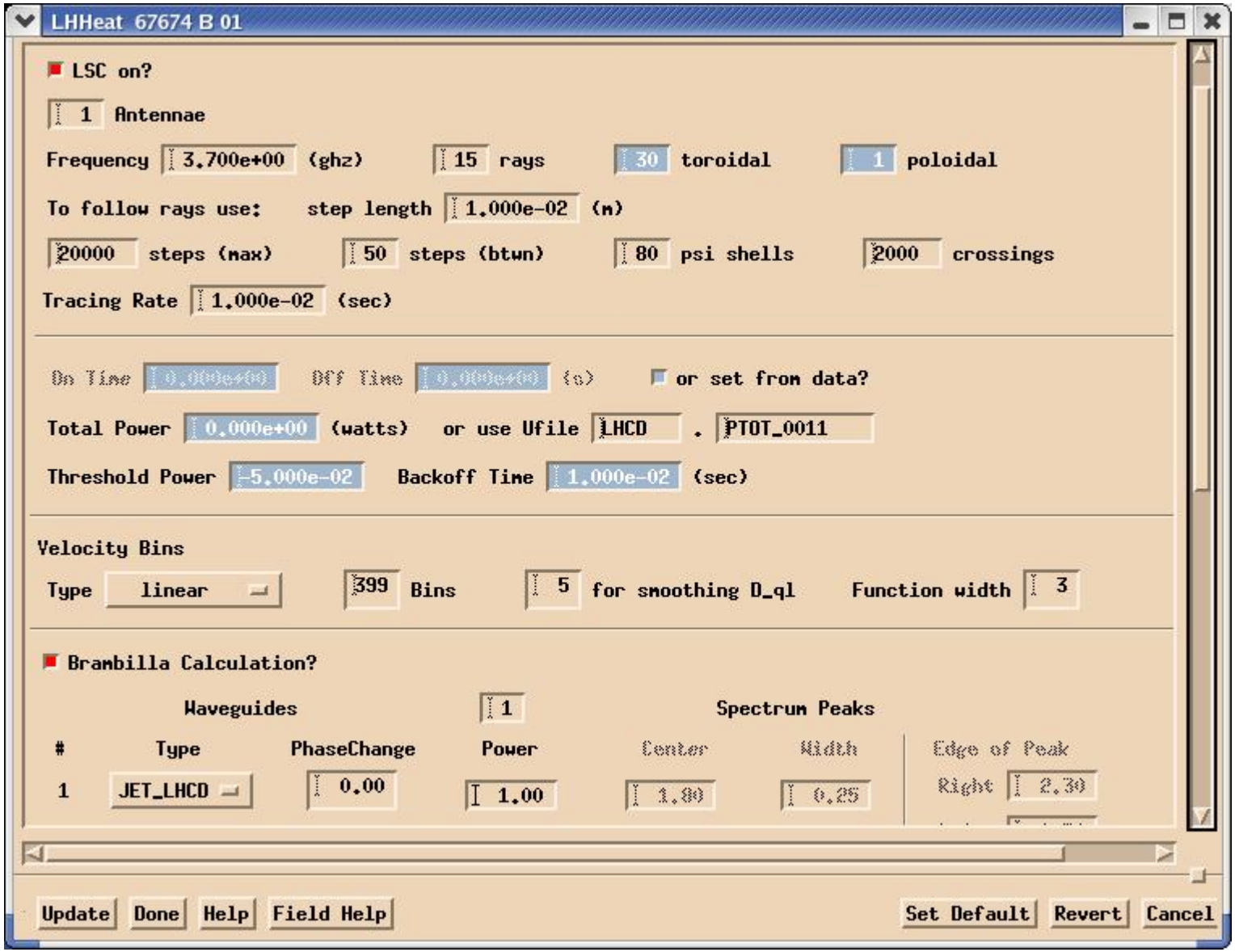
TORAY


ECHeat 122723 A 03
Electron Cyclotron Resonance Heating:
ECH On?
Number of gyrotrons 4
Use Power(t) Ufile
-or-
On/Off times from data?
Threashold: -0.050
Back-off 0.010
OnTime OffTime Power(watts)
1 2.660 4.660 5.180e+05
2 2.660 4.660 7.810e+05
3 2.660 4.660 5.630e+05
4 2.660 4.660 4.810e+05
Freq (Hz) R-Maj(cm) Hight(cm) Polar (deg) Azimuthal(deg)
1 1.100e+11 240.00 67.90 126.4410 197.0560
2 1.100e+11 239.70 69.40 109.4140 198.5890
3 1.100e+11 240.00 67.90 119.8860 194.2840
4 1.100e+11 239.70 69.40 109.3170 196.1340
Update
Done
Help
Field Help
Set Default
Revert
Cancel

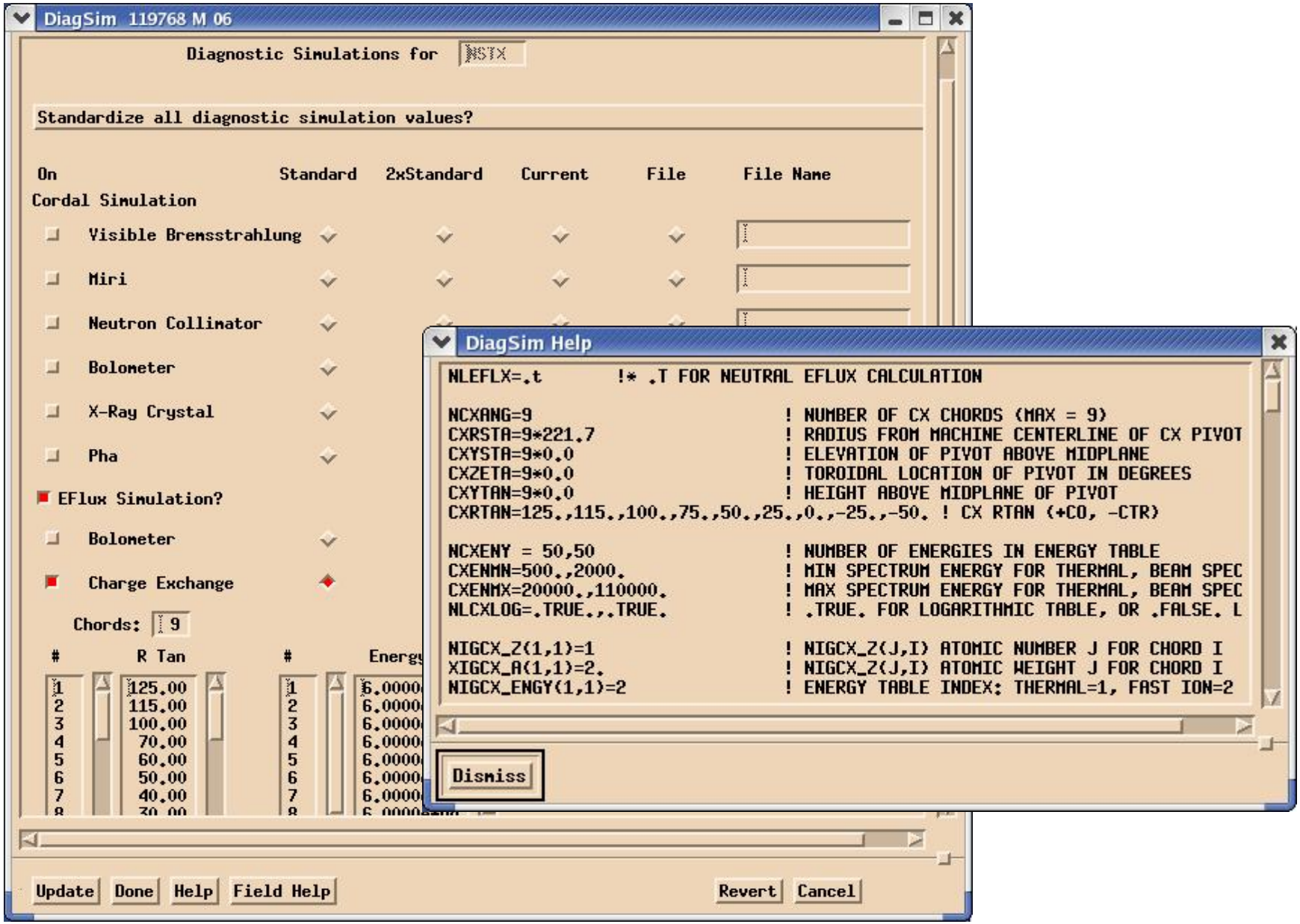
BEAMS


Beams 126067 A 07
Neutral Beams: On?
Beam Ufile P . NBI
Minimum Beam ON Time 2.0100e+00
Time Step 0.0100
External Density 5.0000e+11
On/Off times from data?
Threshold: -0.050
Back-off 0.010
Enter beam data manually
Fast Ion Model :
Monte Carlo
Fokker Planck
Ions 3000
per step 500
Lost orbit output ?
FLR model?
Use larmore?
min larmor radius 0.000
AC Deposition Fct ?
Fast Ion Anomalous Diffusion:
none
De from elec. flux
De from Ware-pinch
from D2F profile
1.000 Multiplier
1.000e+04 min diff.
1.000e+04 max diff.
Time dependent ?
no yes
Energy dependent ?
no yes
Apply Model to:
beam & RF ions
fusion product ions
all fast ions
Ripple Loss:
none
stochastic
Ripple Ufile
Threshold multipliers: beam ions 0.000
fusion products 0.000
Ripple Torque multiplier: 0.000
Update
Done
Help
Field Help
Set Default
Revert
Cancel

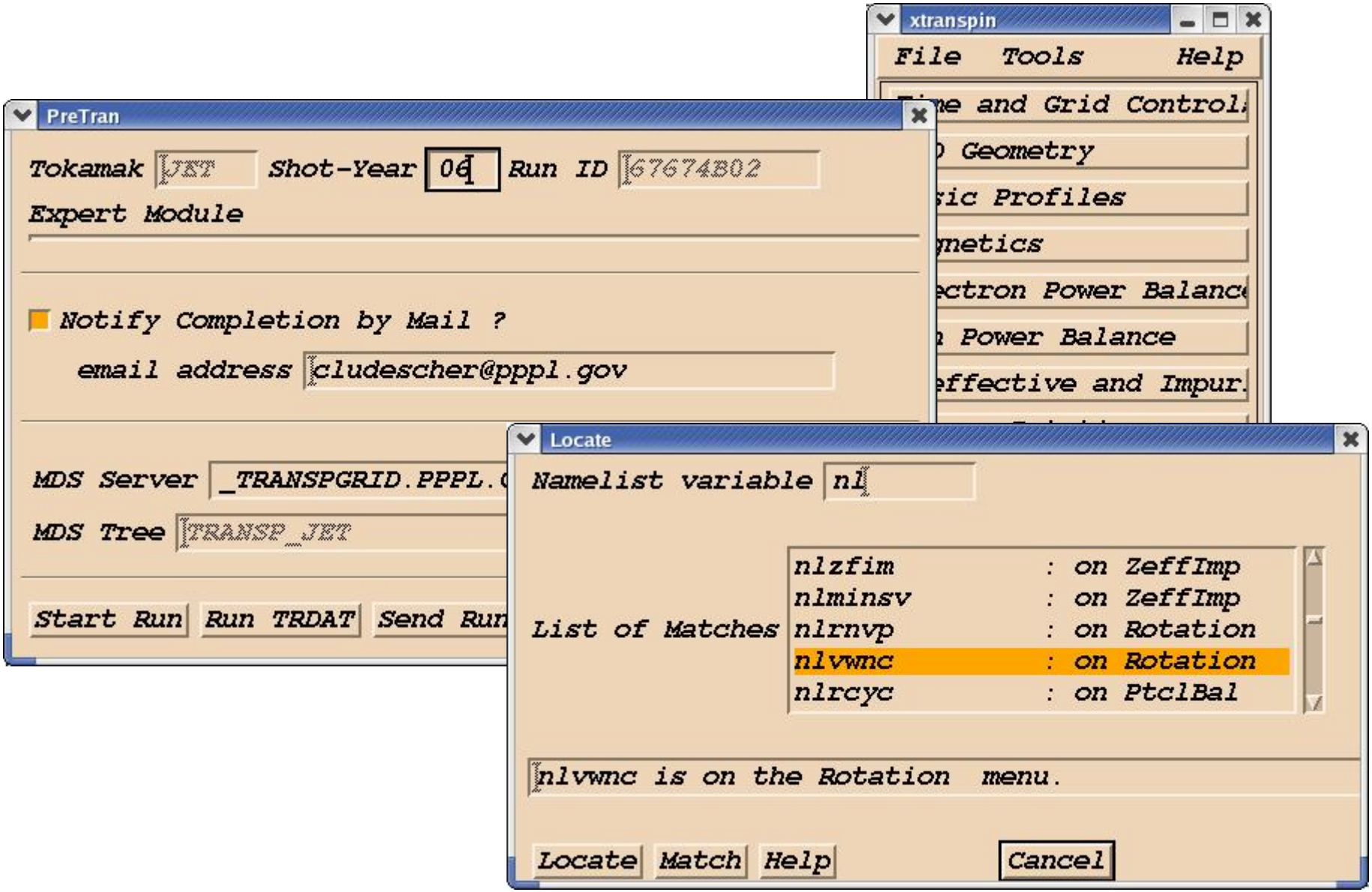
LOWER HYBRID HEATING



DIAGNOSTIC SIMULATION



TOOLS MENU


xtranspin
File
Tools
Help
Time and Grid Control
2D Geometry
Basic Profiles
Magnetics
Electron Power Balance
Ion Power Balance
Zeffective and Impur.
PreTran
Tokamak
JET
Shot-Year
06
Run ID
67674B02
Expert Module
Notify Completion by Mail ?
email address
cludescher@pppl.gov
MDS Server
_TRANSPGRID.PPPL.
MDS Tree
TRANSP_JET
Start Run
Run TRDAT
Send Run
Locate
Namelist variable
nl
List of Matches
nlzfim : on ZeffImp
nlminsv : on ZeffImp
nlrnvp : on Rotation
nlvwnc : on Rotation
nlrcyc : on PtclBal
nlvwnc is on the Rotation menu.
Locate
Match
Help
Cancel

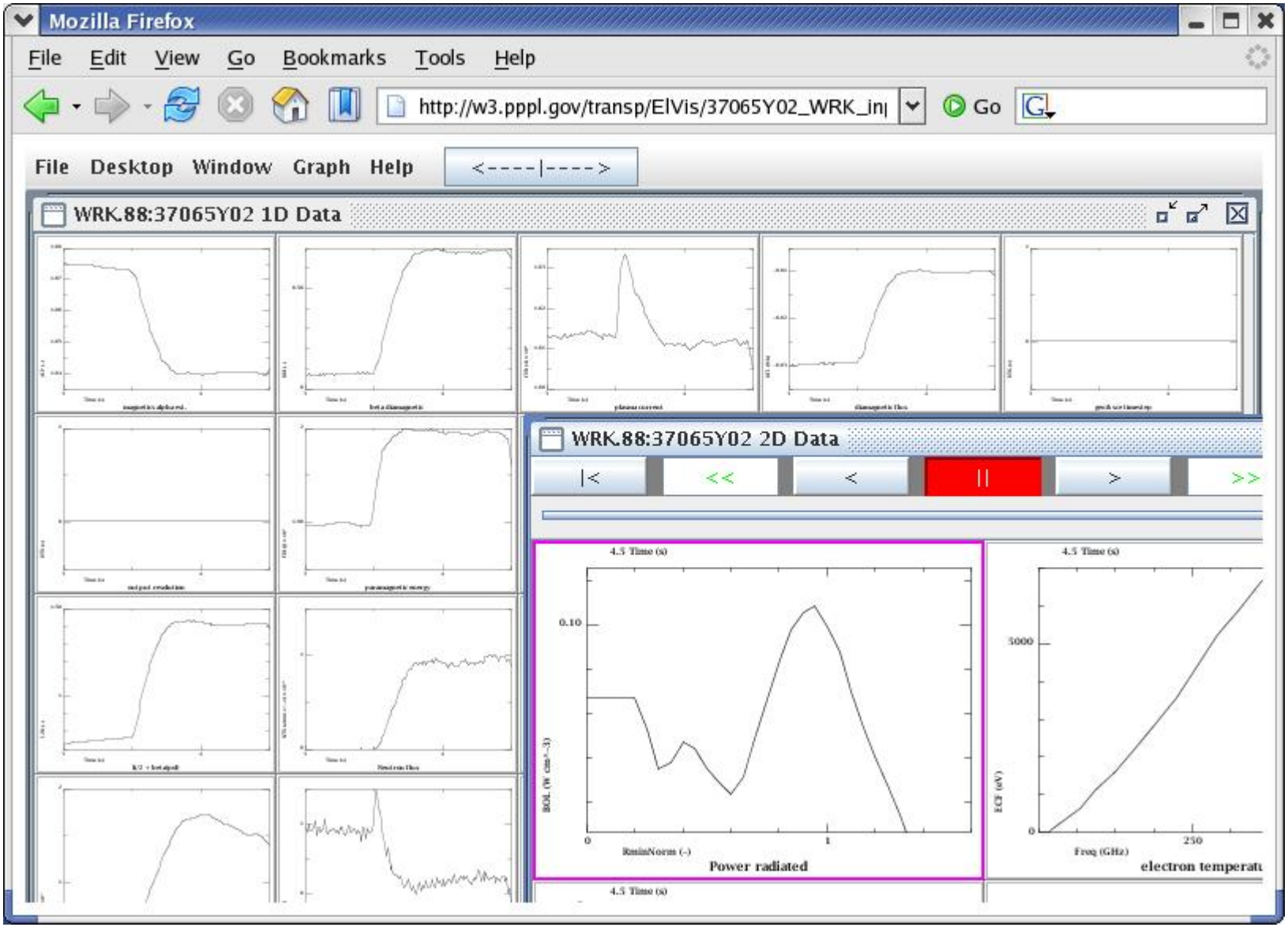
PRETRAN HELP

xtranspin Help

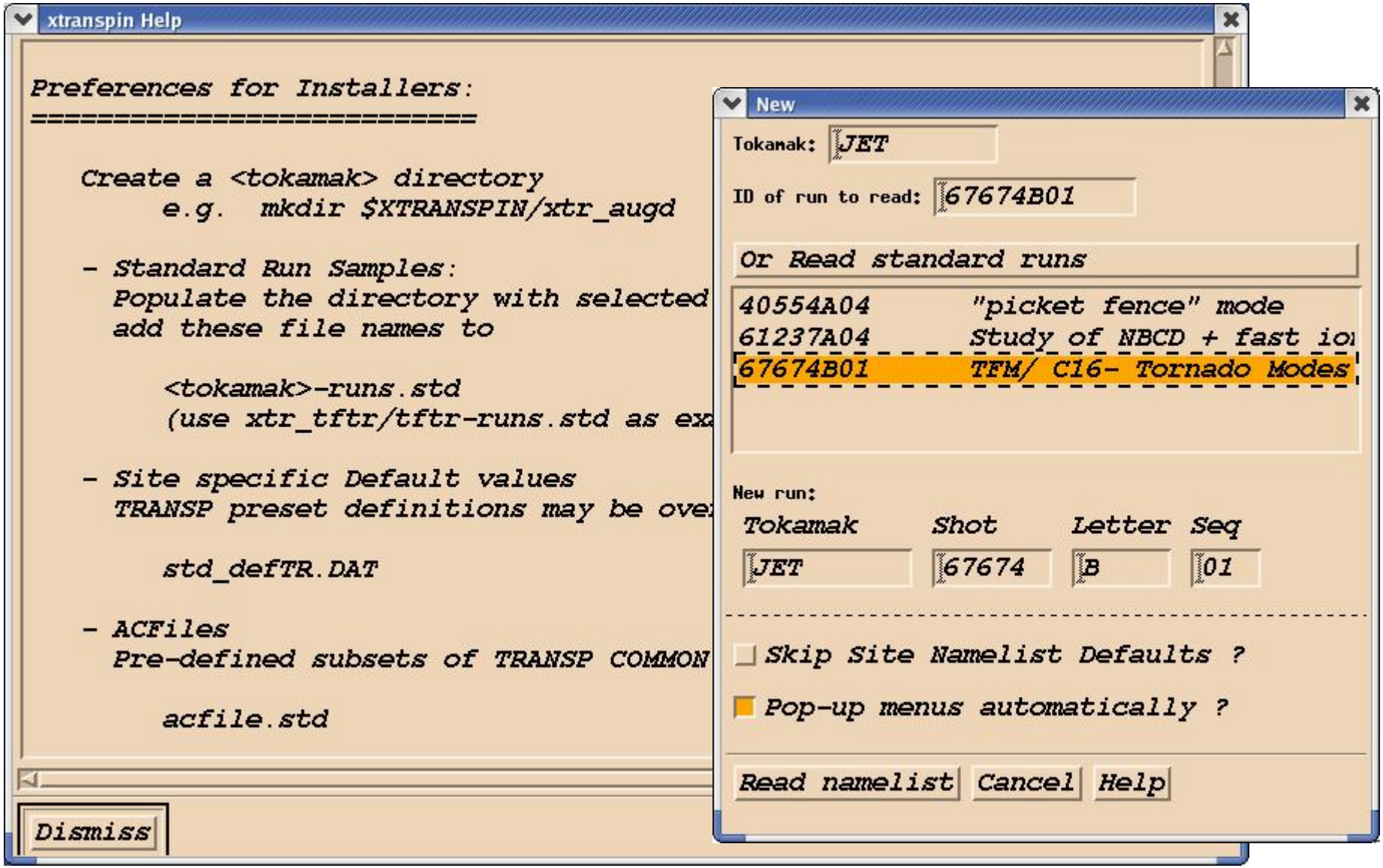
```
"Mail": the TRANSP batch job will send MAIL to you upon completion, informing
you either that the run completed successfully or that it terminated
abnormally. You must enter a valid Email address.
Note: you can define environment TR_MAIL

"MDS Server": the Server, where you want to create your run.
Note: you can define environment MDS_TRANSP_SERVER

"MDS Tree": the Tree, where you want to create your run.
Note: for PPPL users, xtranspin will try to use the default.

Start Run
---------
Pushing this button will execute the equivalent of tr_start to create the
MDSplus Tree and write your Input Data into.
The comment from the namelist, which you entered via the "Comment" pulldown
menu, will be re-used.

When "Start Run" completed sucessfully, your TRANSP run is ready to be queued.
Note, however, that "Start Run" does no check on your namelist input data. If
you are preparing a TRANSP run on new data, you will probably want to use
TRDAT to check the data before proceeding to queue the TRANSP batch job.


Send Run
---------
Pushing this button will execute the equivalent of tr_send to queue the run
```

Dismiss

TRDAT OUTPUT FROM MONITOR



SITE CUSTOMIZATION



NTCC TR_Client - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://w3.pppl.gov/ntcc/TR_Client/

NTCC TR_Client Modules

TR_Client provides programs and scripts to prepare, start, launch, monitor and fetch Runs using the Fusion Collaboratory TRANSP Comput Server.

- README_rplot.
- Notes_mdsplot.
- XTranspin
  - README_XTranspin.
  - UserGuide.
- UserGuide.

- Fusion Collaboratory Transp Production
- PPPL's Transp-Unix-Mdsplus Implementation

Modules available:

- TR_Client
- TR_Start
- XTranspin

Download the **XTRANSPIN** Module

- as ZIP Archive
- as Compressed Tarfile

To recieve notification about updates subscribe to the xtranspin Mailing List

This project is sponsored by the Office of Fusion Energy Sciences of the U. S. Department of Energy .

SUMMARY

- **GUI for TRANSP Namelist**
- **Preserves Format of original Namelist**
- **Aids debugging TRANSP Namelist**
- **Can be customized for Sites and Tokamaks**
- **Starts and submits run to Fusion Grid Server**
- **Available as downloadable NTCC package**

- **Slides at: http//:w3.pppl.gov/~ludesche/XTranspin**