XAL Update

6/10/03

C. Allen, D. Attavio, P. Chu, J. Galambos, W.-D. Klotz,
C. McChensney, T. Pelaia, A. Shishlo

- Framework
- Apps
- Online Model

Application Framework

(T. Pelaia)

Common Framework for users to develop apps with

- Advantages
  - offers common look + feel between apps
  - gives developers a running start
  - can add features/update at one place
- Features
  - copy “windows” menu bar
  - “document” based, each instance of an application is its own document

Application Framework Overview

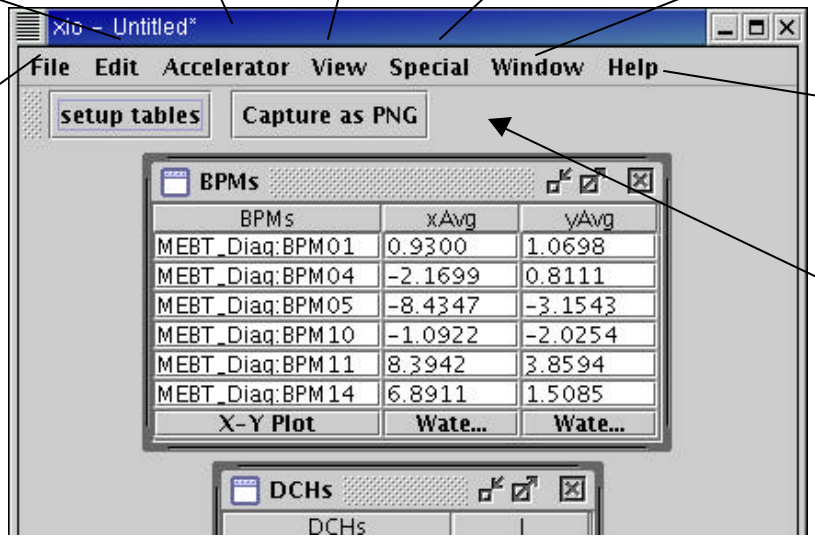
Select the part of the accelerator to work with

View error, info messages

App specific actions

Cut/paste
App. preferences

Find other app instances



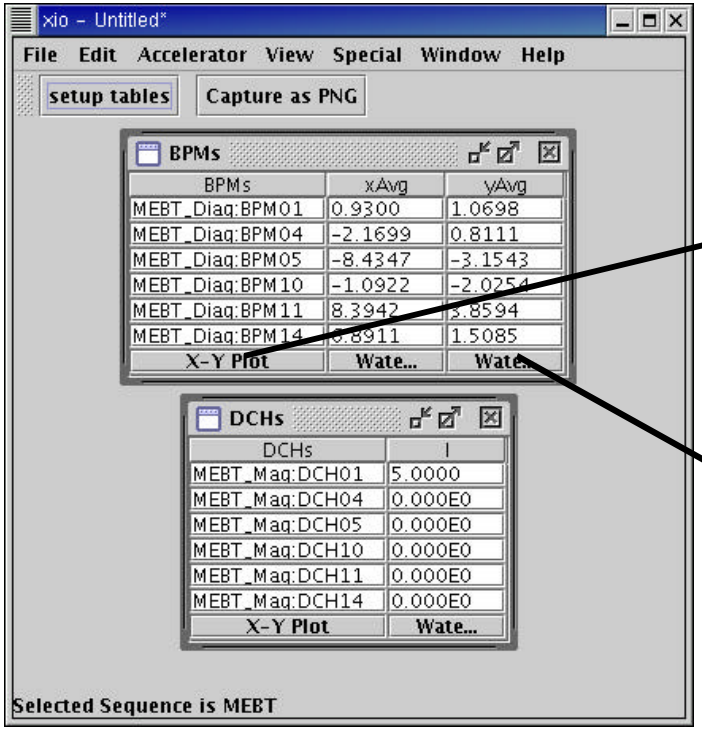
Online help

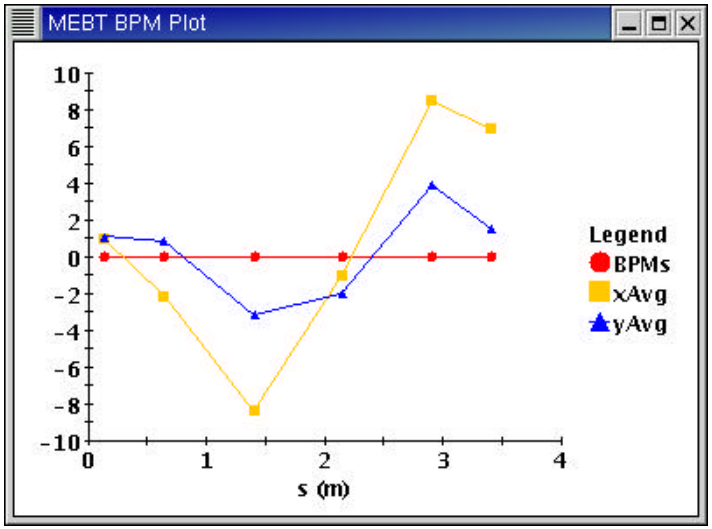
Save/restore app setup
export data

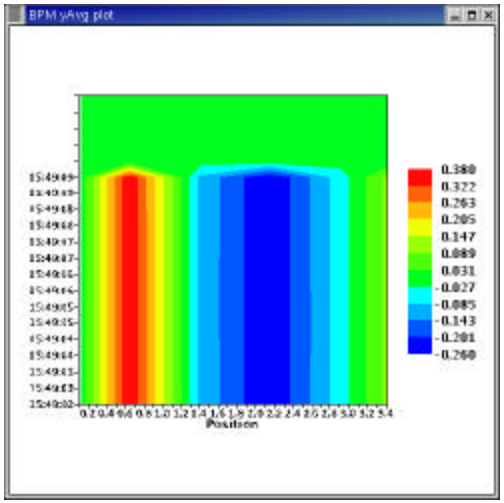
Toolbar for common actions

Xio

(N. Pattengale, P. Chu, J. Galambos, D. Attavio)



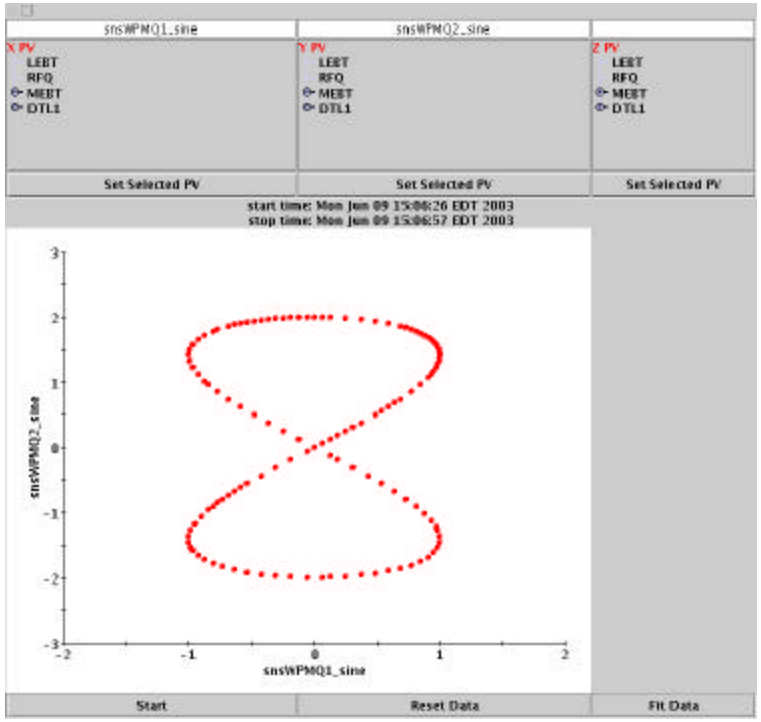


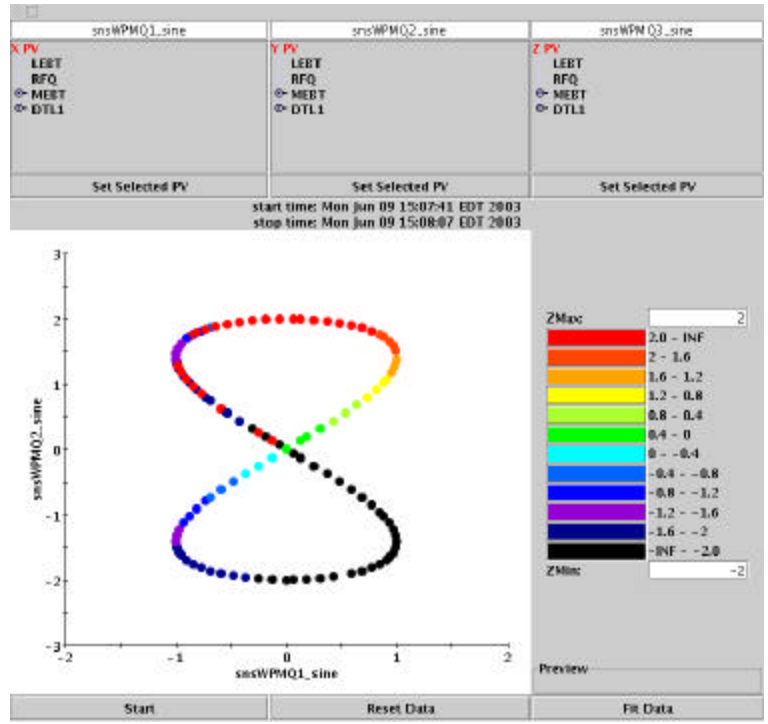


- General purpose browser
  - switched to application framework
  - added waterfall plot

X-Y(-Z) Correlator

(P. Chu, J. Galambos)

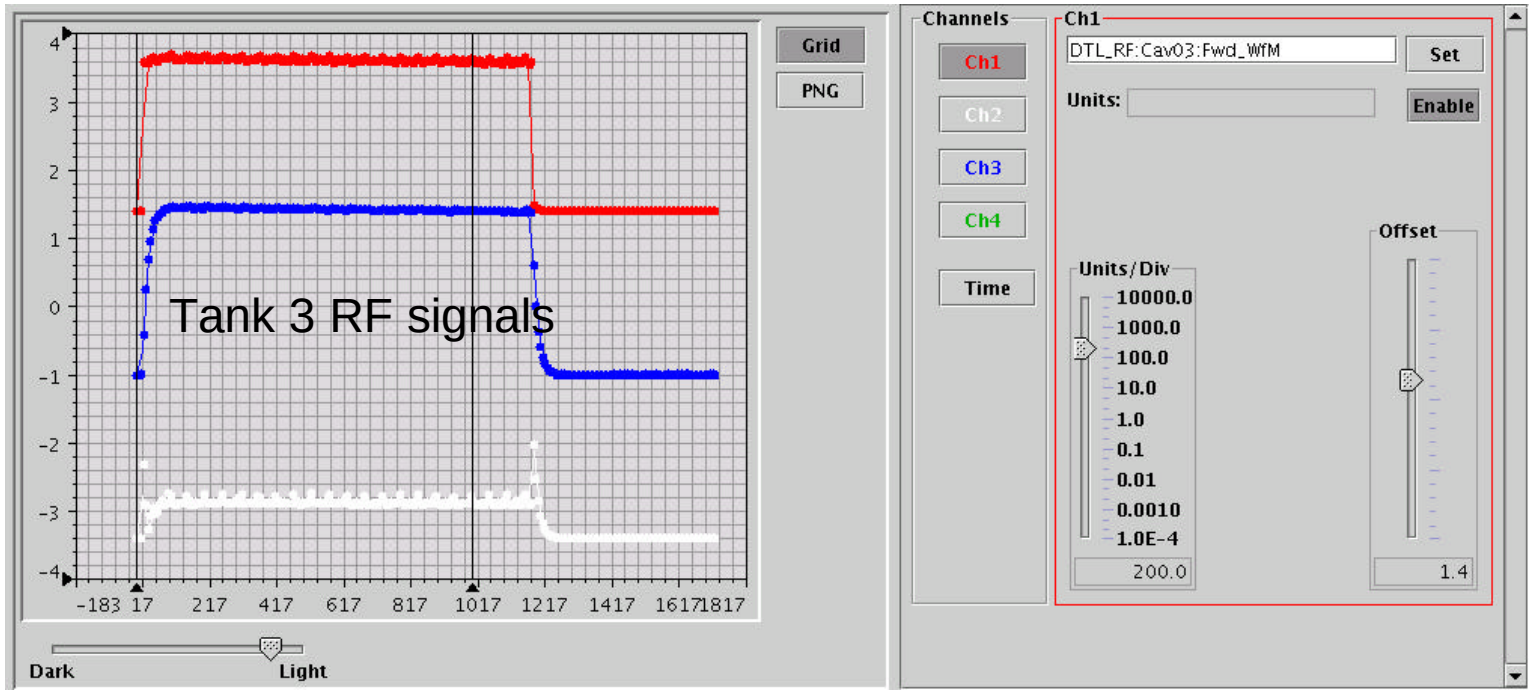




- 2 or 3 variable correlator
- Uses the XAL PV correlator
- Some analysis, export data, …
- Uses application framework

Scope

(*T. Pelaia*)

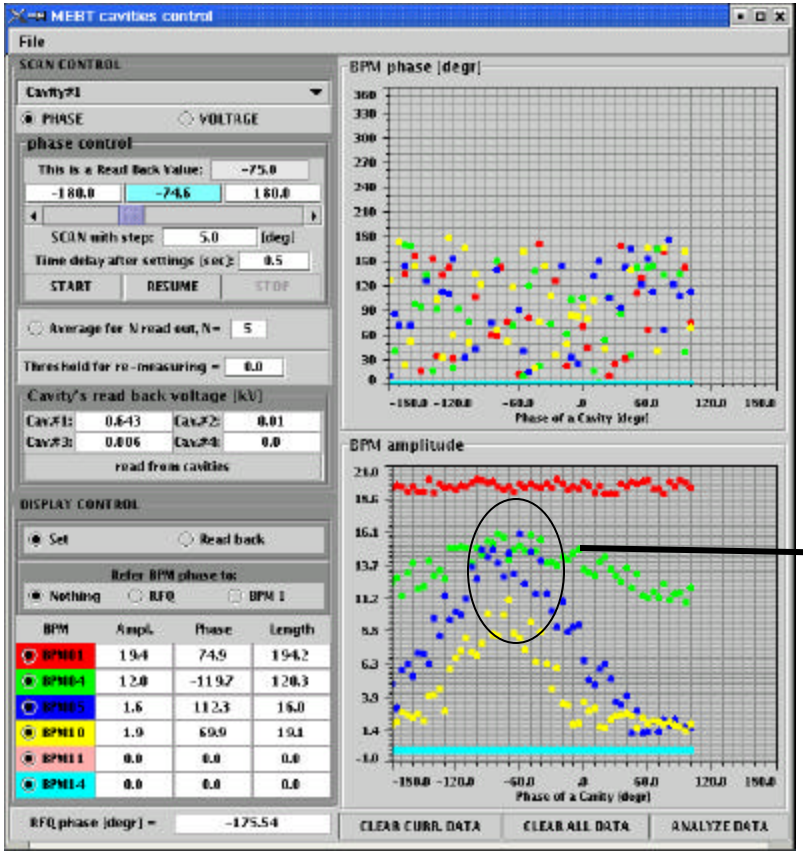


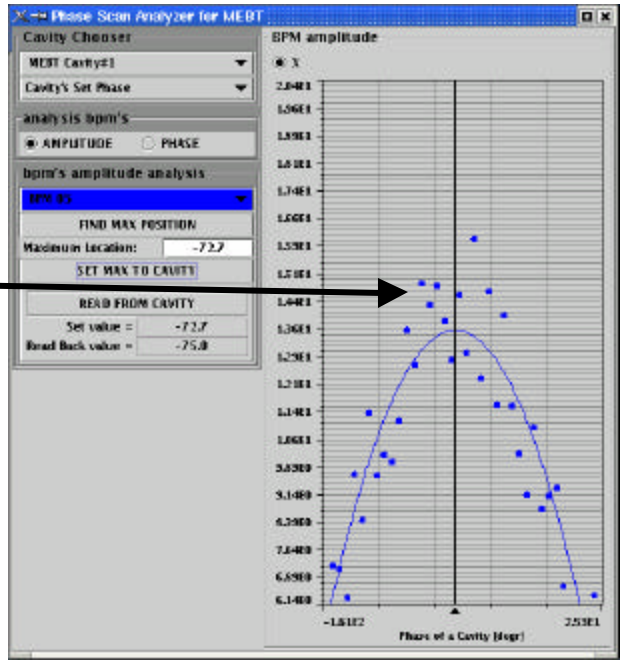
- View PV macropulse waveforms in a virtual "oscilloscope"
- X axis is time, NOT arbitrary units!
- Overlay waveforms from RF, BPM, BLM, BCM, … (as soon as they are provided)
- Uses correlator
- Future features: math, generalized trigger,
- Uses the application framework

MEBT Cavity Setter, Phase + Amplitude

(A. Shishlo)

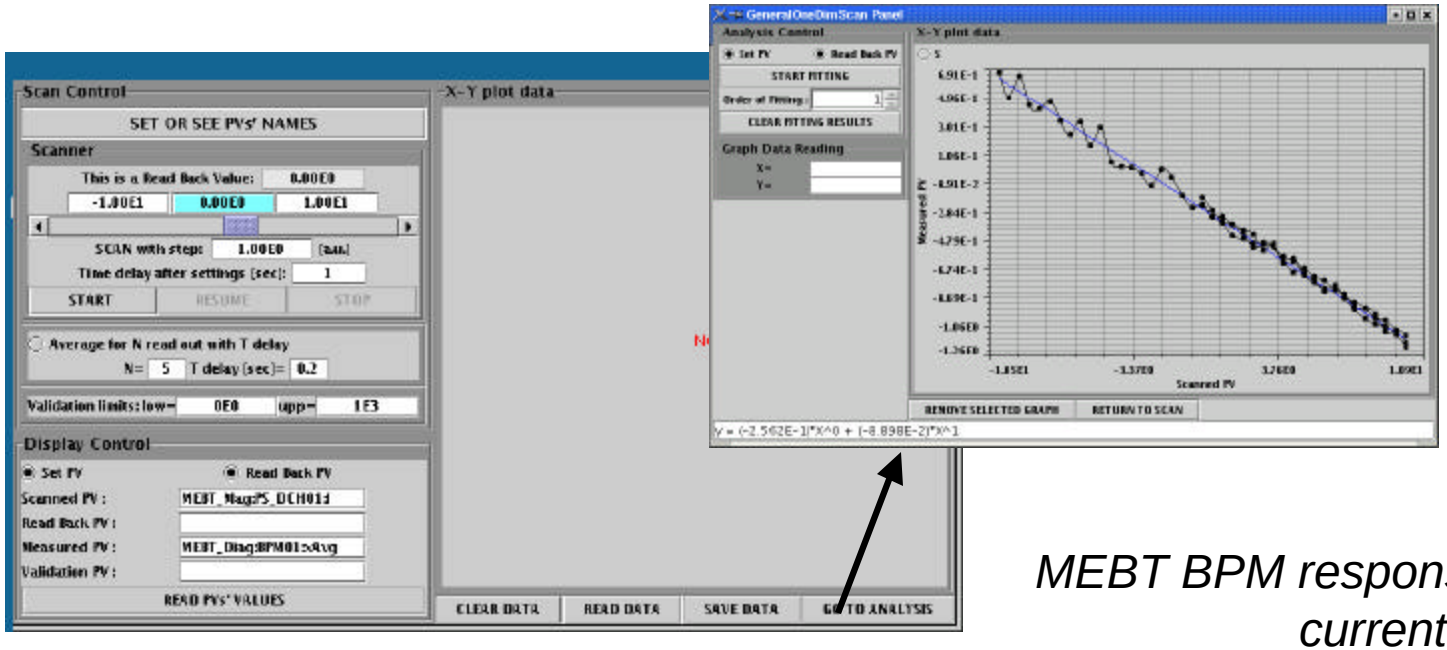
- Converted from Matlab
- Worked for MEBT re-commissioning. Some tweaks identified.





One-D Scan

(A. Shishlo)

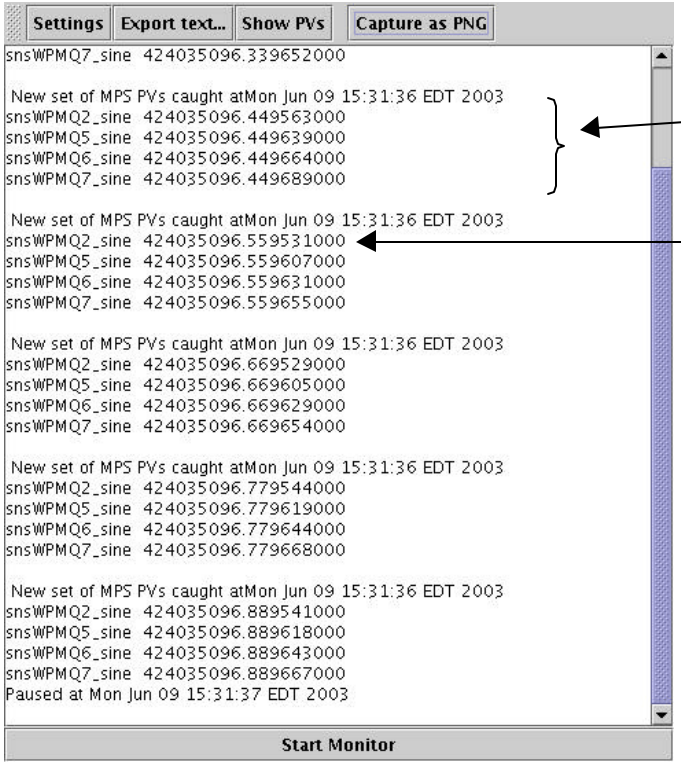


MEBT BPM response vs. dipole current

- GUI interface to setup 1-D “experiment”
- Specify scan PV, range, interval, rate, averaging, ...
- Specify monitor PV
- Do some analysis

MPS Post Mortem

(J. Galambos)

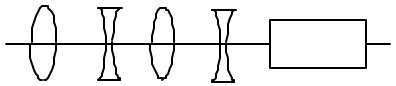


- Collects MPS events and sorts by macro-pulse
- Within a macro-pulse, sort by order of occurrence
- Will do statistics
- Uses the application framework
- Plans include:
  - Run automatically in background
  - Have a hierarchy of these (by accelerator sections)

Online Model Status

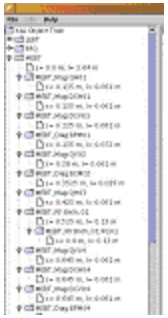
(C. Allen, C. McChesney, W.D. Klotz, P. Chu)

Device View
(Stored in Database)



- Single entry per element

- only physical devices



Lattice View
(used in modeling)

- Elements may be split

-Includes drifts

- Two views: device + lattice
- Lattice is generated automatically from the selected sequence (set of devices)
- Lattice elements can be synchronized with the real machine
- Particle + envelope probes can be tracked though the lattice
- Beam results (twiss + phase space info) can be associated with the device

Online Model Status

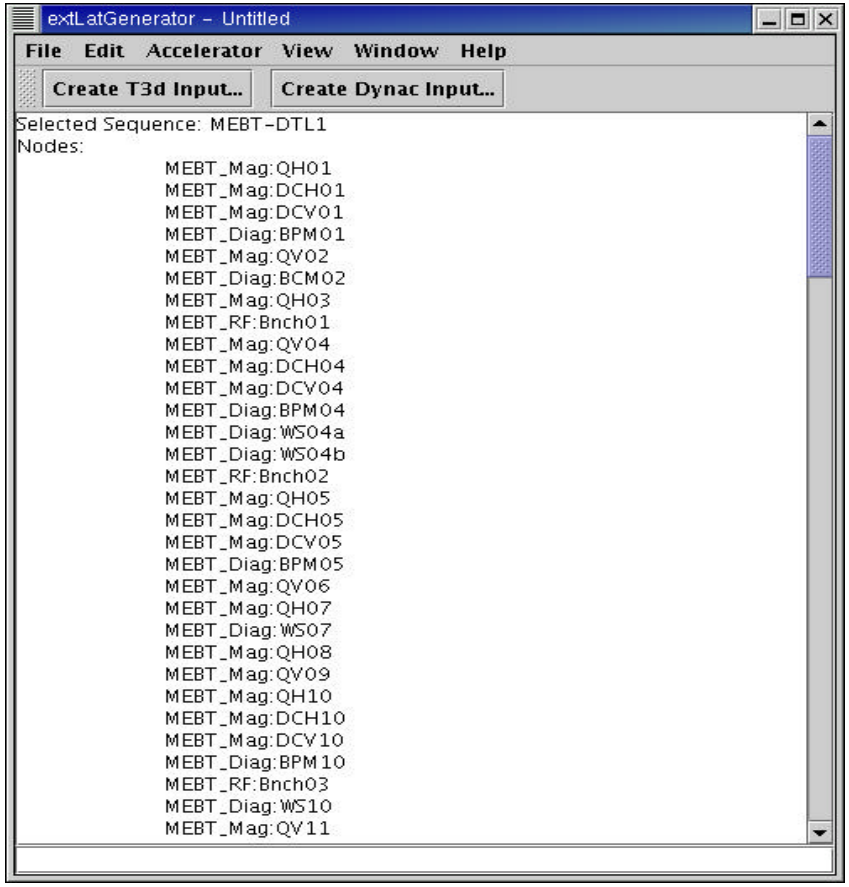
(C. Allen, C. McChesney, W.D. Klotz, P. Chu)

- Standalone lattice tracking has been compared to Trace 3D
  - for the particle probe, good agreement
  - for the envelope probe, some small discrepancies
  - will produce a note shortly on this benchmark
- Ran the full online model (from the device perspective) with recent MEBT commissioning
  - Runs – found some expected + unexpected behavior
  - RF still needs checking

External Lattice Generation

(P. Chu, W. D. Klotz)

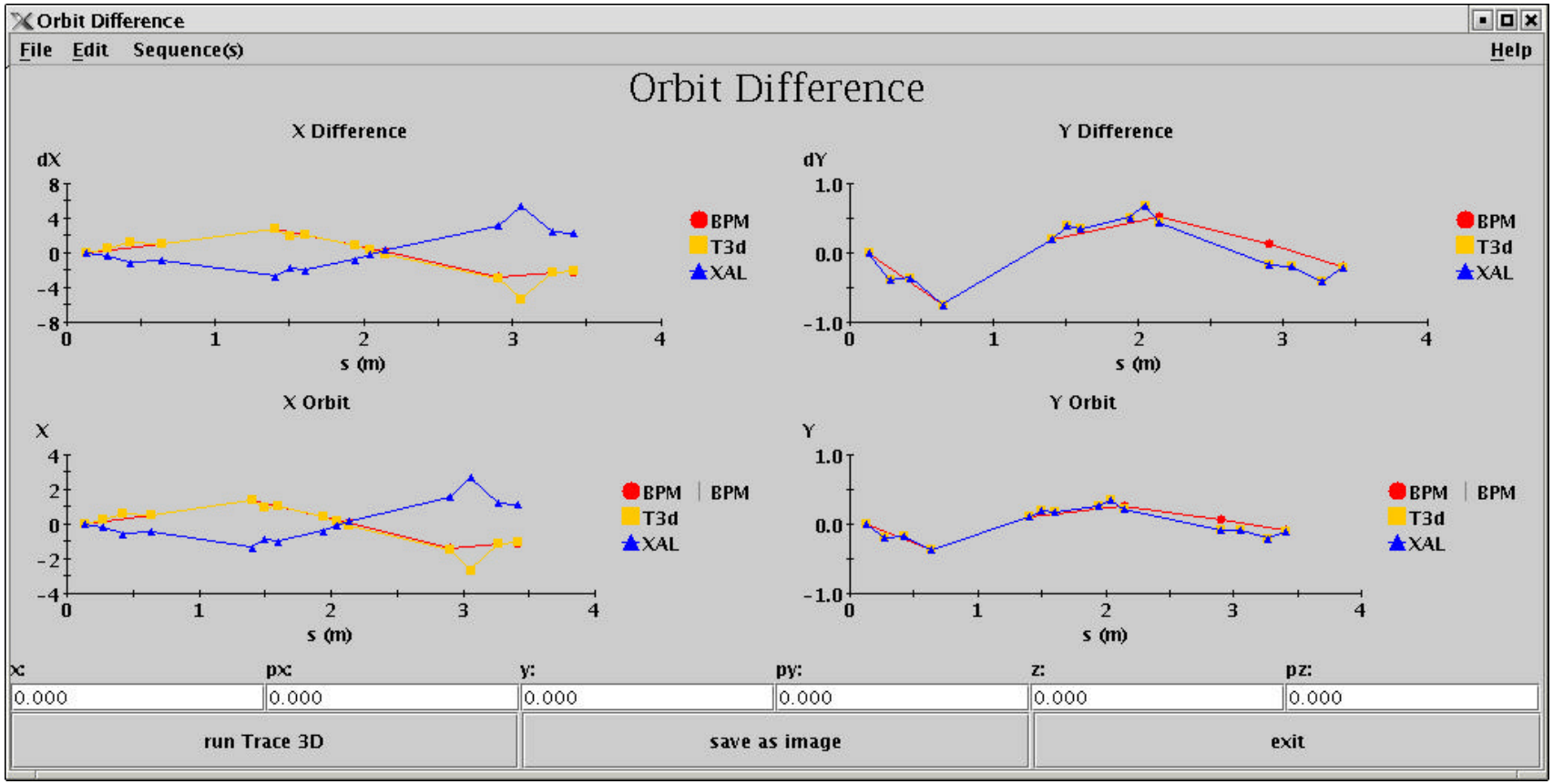
- Uses online model lattice generation
- Setup for Trace 3D + Dynac(?)
- Uses the accelerator framework



Orbit Difference

(P. Chu)

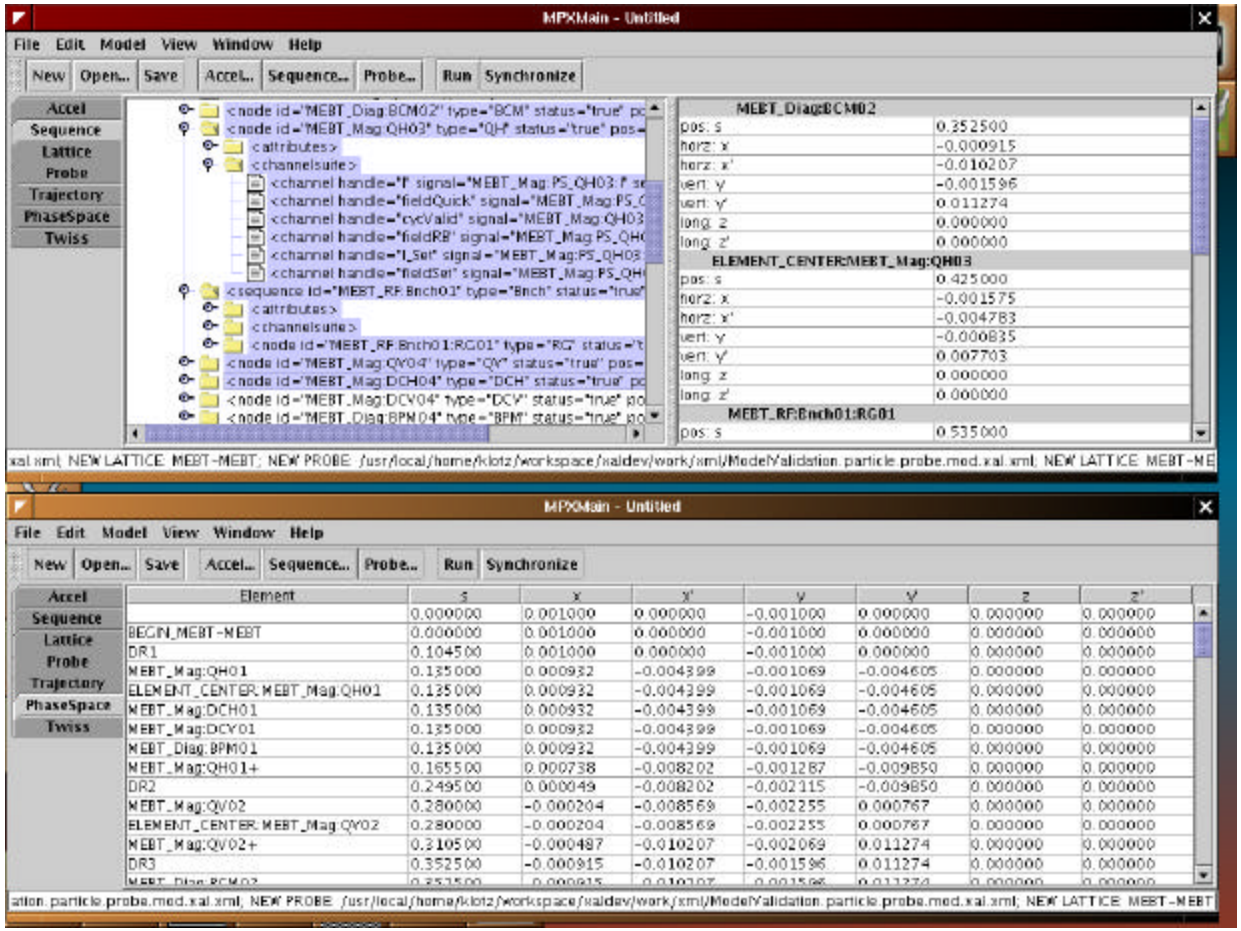
(Test case using virtual accelerator)



- Uses online model in addition to Trace 3D
- Good agreement with Trace 3D

Online Model App

(W. D. Klotz)



- Select accelerator, sequence + probe
- Synchronize with machine + run
- Examine beam parameters at either the lattice level or by device
- Uses framework