

SVX Software Overview

SVX Software web page:

<http://www.phenix.bnl.gov/phenix/WWW/upgrades/silicon/software/index.html>

Currently existing software:

PISA simulation:

<http://www.phenix.bnl.gov/viewcvs/simulation/pisa2000/src/svx/>

Produces PISAEvent.root file with pisa hits, and svxPISA.par file with simulation parameters (geometry, etc.)

Offline reconstruction:

<http://www.phenix.bnl.gov/viewcvs/offline/packages/svx>

Reads pisa hits file and parameters file. The output is a histogram file and a TTree root file.

Very good descriptions of these packages by Vladimir Rykov (see the web page).

I will concentrate on what is missing and what should be done in a different way. The goal is to be "PHENIX-compatible" and avoid problems in the future.

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Currently existing software:

PISA simulation:

- o In good shape.
- o Endcap geometry probably needs to be updated.
- o Get rid of svxPISA.par output text file.
Put all info into PISAEvent.root file like other subsystems.

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Currently existing software:

Offline reconstruction:

- o Internal structure is in good shape (classes representing hits, clusters, etc.).
- o The "master class" (*SvxReco*) should be moved to *offline/framework/simreco/SvxSimreco*
- o Output should be in the standard PHENIX form (easy: just add existing objects to the PHENIX node tree).
- o Reconstruction module (*SvxReco*) can currently run only from simulation: uses pisa-specific calls to read the input, needs *svxPISA.par* to run.
- o Better approach would be to make a separate simulator module which puts its results into the standard PHENIX node tree. Then the reconstruction can be run in the same way both for simulation and the data.

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Currently existing software:

Offline reconstruction:

- o When I say "reconstruction" I probably exaggerate.
- o Essentially no detector response, currently clusters are just fired pixels. (*Kieran, Vladimir*).
- o Needs cluster finding .
- o Needs standalone tracking (*Alan*).
- o Needs database access (see the following slides).

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Plans for the future:

Database:

Geometry, Calibration, and Address classes with methods to read/write from/to the database. Also need methods to read from *pisa.par* or ascii files to update database for real data and simulation. Database access is the most urgent issue in my opinion.

- o Interface: odbc or PdbCal?

Both interfaces are officially OK, but I have a feeling that odbc is the preferred one.

- o Simulation database: negative run numbers?

No PHENIX-wide solution right now. Each subsystem has two separate reconstruction modules.

Calibration, Alignment, and Online Monitoring tools:

Related but separate projects. Less urgent.

Existing OnlMon framework, good examples are available.

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Plans for the future:

Integration into the Phenix-wide software

- o cgl package is in bad shape. Kalman? Something else?
- o Hua Pei is doing DCA studies using Kalman Fit.
Some problems with DCA calculation in Kalman???

Manpower

Many projects, some of them not urgent, but the sooner we start, the easier it will be for us.