hep.lcd and JAS Update

Tony Johnson
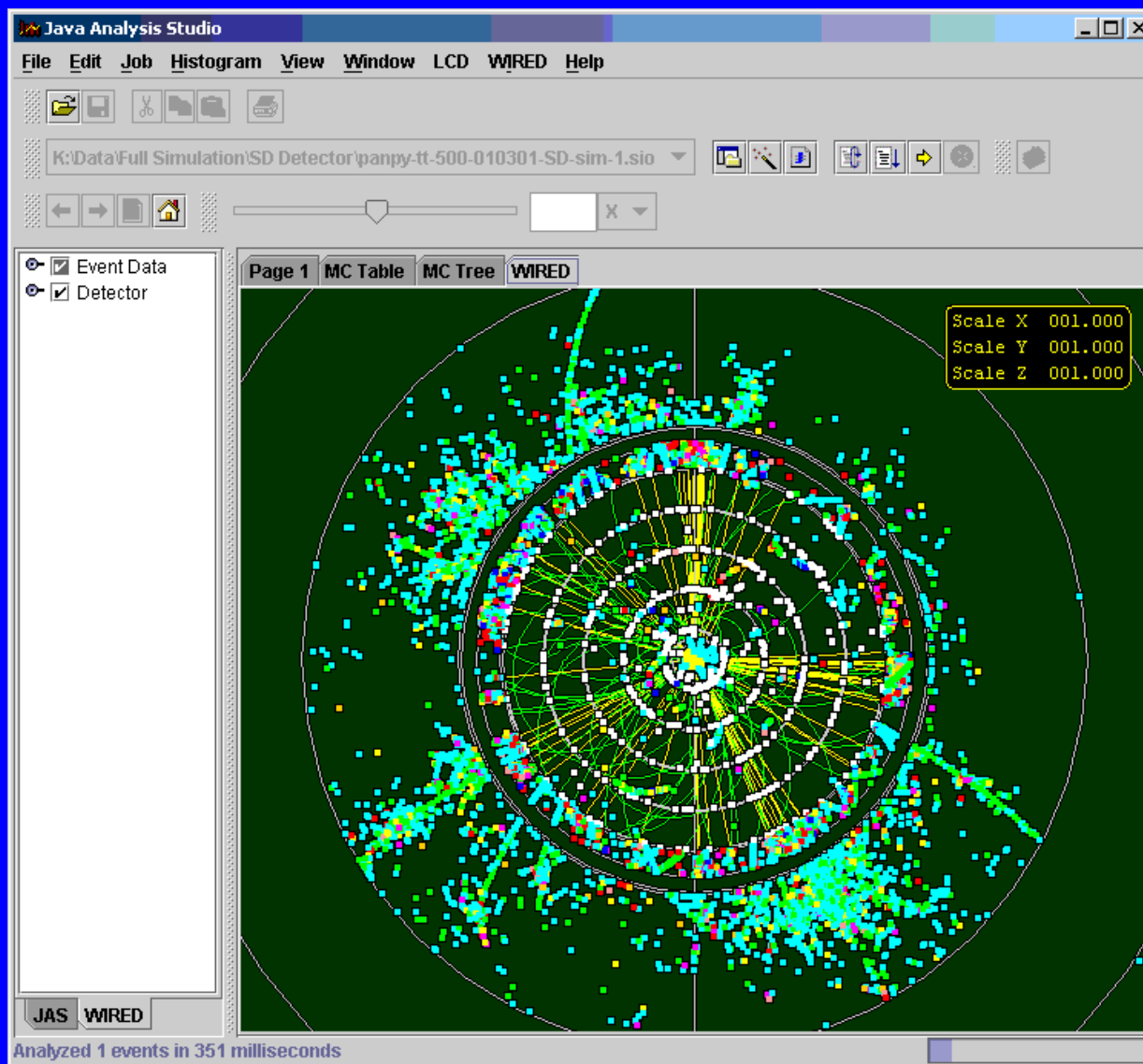
Linear Collider Retreat

June 2002

hep.lcd Package Overview

- Java Reconstruction and Analysis Package
  - Full reconstruction package
    - Track Finding and Fitting
    - Clustering
    - Full vertex-finding package ("ZVTop")
  - Two event displays (simple + WIRED)
  - Able to read ASCII/SIO/LCD format files
  - Jet Finding/Event Shape utilities
  - User provided utilities/examples
  - Use standalone or with JAS

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LCD Wired

hep.lcd Recent Improvements

- **hep.lcd version 1.44 now available**
  - SIO Output
    - Event merge/overlay (for background studies)
  - hep.lcd.vertexing.mc package
    - Finds weak decay vertices (B's and D's) and V0 decay vertices (Lambda0 and K_short) in MC truth information.
  - hep.lcd.util.collections package
    - CalorimeterHitMap

hep.lcd Infrastructure

- **Release Management (frisbee)**
  - New release now totally automated
- **Documentation Improvements**
  - Improved documentation for commonly used classes
  - Automatic generation of docs
    - Downloadable docs
  - Documentation on web now linked to JAS/Java documentation, source code

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hep.lcd: Coming Soon & Wish List

- Hit Merging, Smearing, Time-offsets

- Photon finder

- Reconstruction output (to SIO)

- More/Improved clustering algorithms

- Add "GhostTracks" to ZVTop

- New tracking algorithm ("Hough Transform")

- Improvements to WIRED event display

- Particle ID

- <Your-input-and-suggestions-here>

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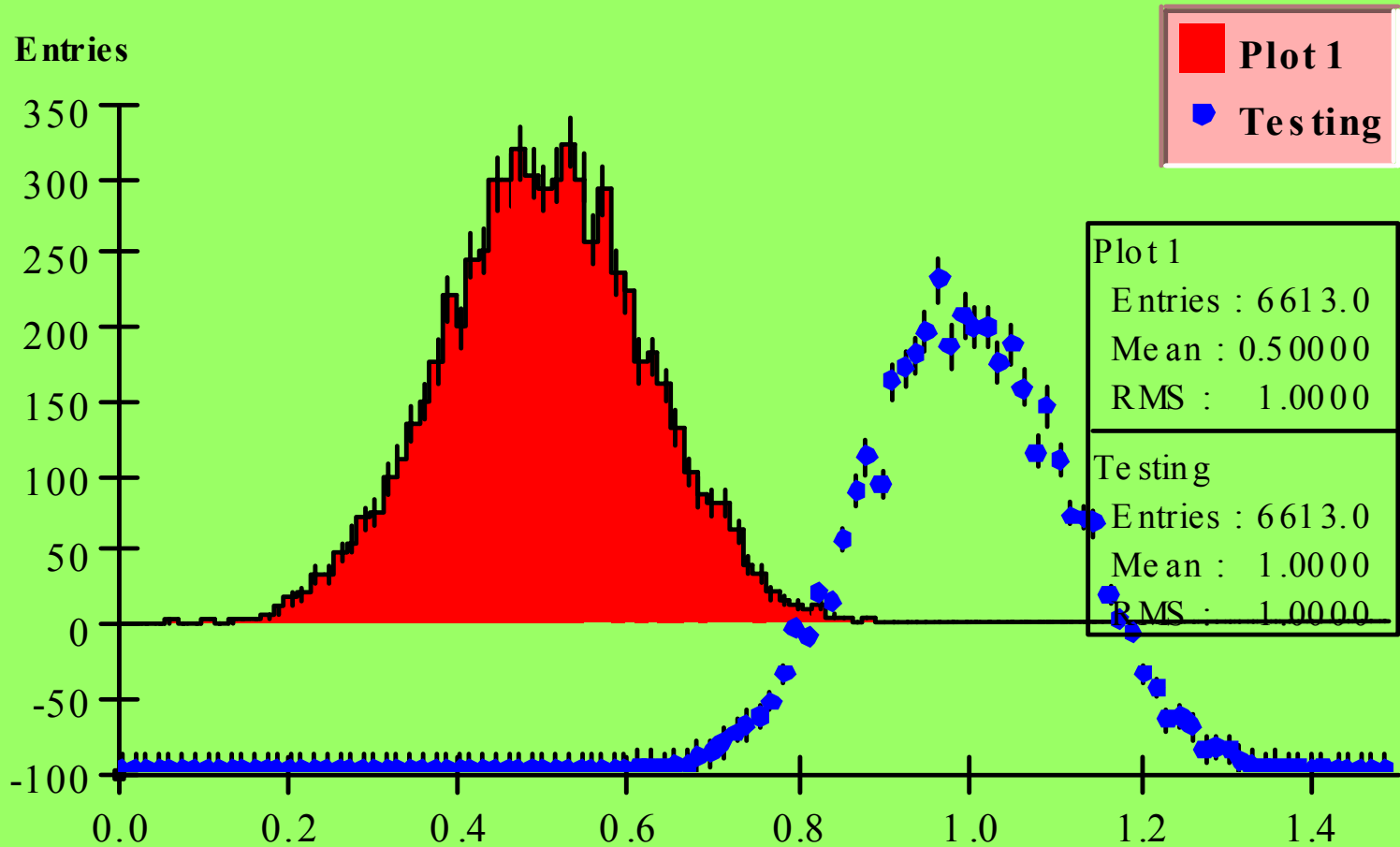Accelerator
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JAS Status

- ## JAS 2.2.5
  - Released April 2002
  - New Features
    - Update VM shipped with windows version of JAS to JDK 1.4.
    - Added support for saving plots and pages in a variety of formats, including postscript (EPS), PDF, SVG (scalable vector graphics), and windows metafile (great for including into powerpoint or word).
    - Added support for copy/pasting plots and pages into other programs.
    - Added support for chaining PAW files.
    - Added support for XY plots to JASHist plot widget.

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JAS – Copy to PowerPoint

Bugs (to be fixed in 2.2.6?)

- Efficiency plots

- FixedNumberOfJetFinder

- Normalization control from GUI

- <your-bug-here>

JAS 3.0

- **Features**
  - **Support for AIDA 3.0**
    - ◆ Analysis package developed in collaboration with CERN, LAL
    - ◆ Advantages for JAS:
      - – Histogram Arithmetic
      - – Tuples (creation and manipulation)
      - – Fitting including chi2 and max. likelihood fitting
        - • using Minuit or other algorithms
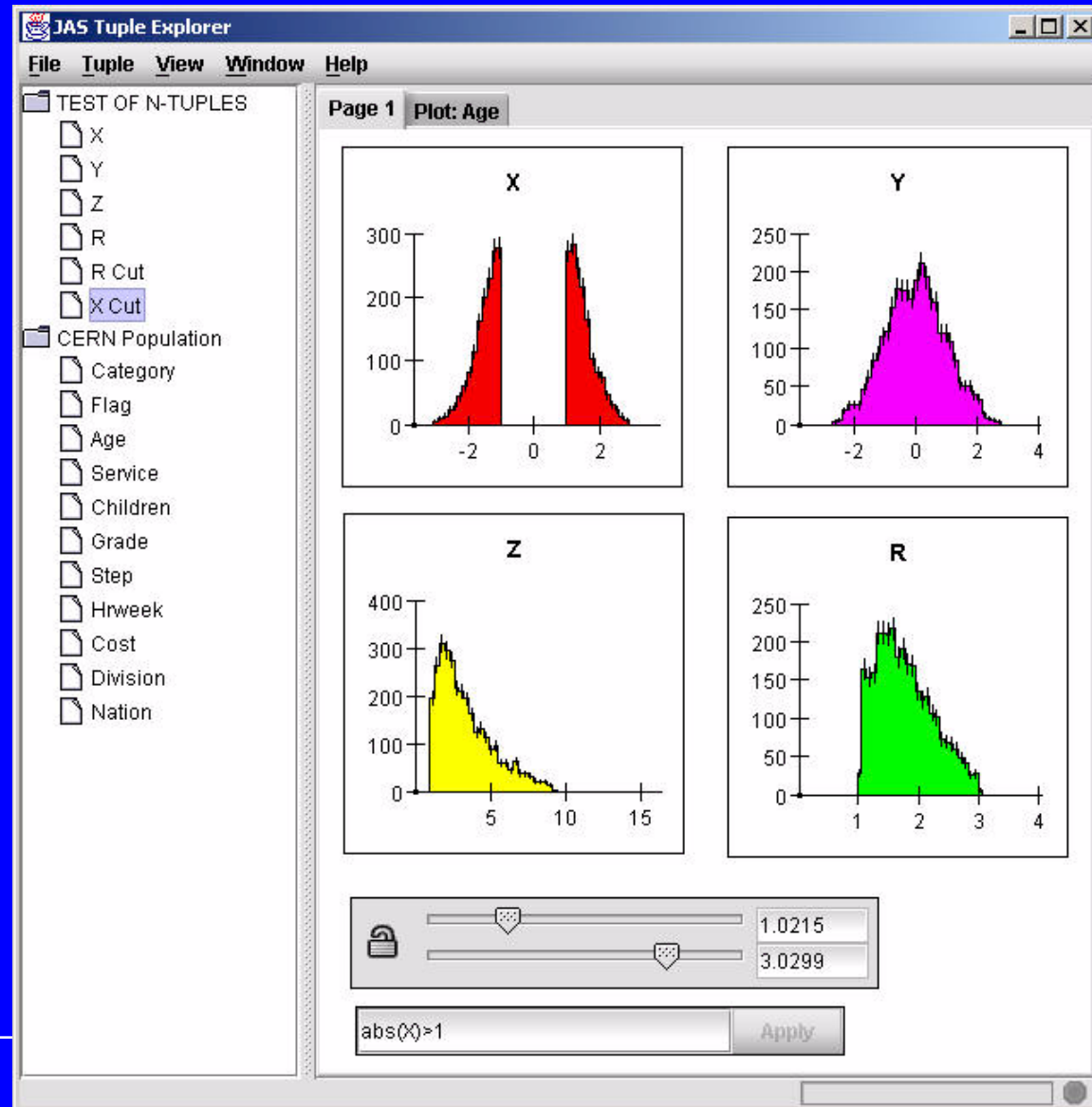   - ◆ Will provide interoperability with other packages
      - – Anaphe (CERN) and Open Scientist (LAL)

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JAS 3.0

■ **Features cont.**

- ● Update editor to latest jEdit
    - ◆ Find, Replace, *etc* will be added
    - ◆ Including regular expressions
- ● Python scripting (in addition to Java)
- ● Use CORBA (instead of RMI)
    - ◆ Should solve remote firewall issues
- ● Save/Restore Job will work (via XML)

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Tuple Explorer

- Prototype for functionality to be included in JAS 3.0
- Plot 1D, 2D, Profile, XY, Scatter plots by selecting columns from tuple.
- Dynamically create new columns using built-in expression evaluator
- Dynamically create and update cuts.
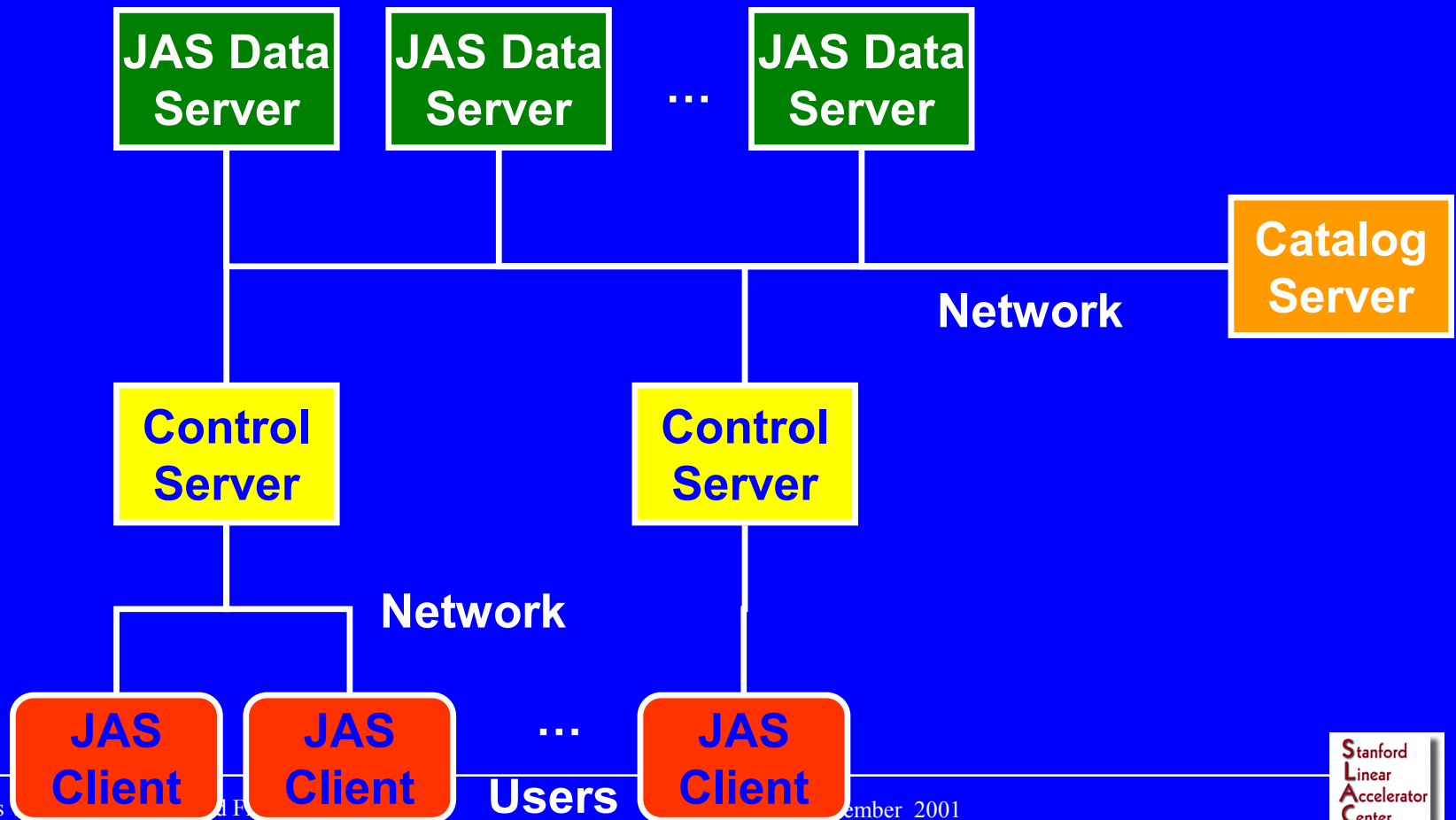- Drag and Drop columns, cuts onto page

JAS 3.0

■ Time Scale

- ● Being worked on in parallel to JAS 2.2.x
- ● Target initial release September 2002
- ● Still time to get your favorite feature included!

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JAS + GRID

- Parallel analysis farm

- Prototype exists
  - being productized by Tech-X corporation with SBIR funding

JAS Data Server	JAS Data Server	...	JAS Data Server		Catalog Server

Network

Control Server				Control Server

Network

JAS Client	JAS Client	...	JAS Client

Users

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Links

- ## hep.lcd
  - http://www-sldnt.slac.stanford.edu/jas/Documentation/lcd/default.htm

- ## JAS
  - http://jas.freehep.org/

- ## JAS Distributed Computing Prototype
  - http://jas.freehep.org/documentation/distributedcomputing/

- ## JAS Tuple Explorer
  - http://jas.freehep.org/documentation/TupleExplorer/

- ## AIDA
  - http://aida.freehep.org/

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