Single Strip Event Display

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Motivation

Graphical tool to help comparing signals reconstructed/simulated/measured in a single scintillator strip on the event by event basis.

Features

- Graphical representations of signals registered by the photomultipliers on both sides of the scintillator strip.
- Display on event by event basis.
- All operations performed via the graphical user interface (GUI)

Features

- Supports various input formats (signal database, simulations, experiment)
- Simple graphical display of the hit position in the scintillator strip

Some technical details

- Written in C++, object-oriented approach
- Working on Linux operating system with ROOT framework installed.
- Modular architecture
- User interface based on GUI library (part of the ROOT framework)

Some technical details

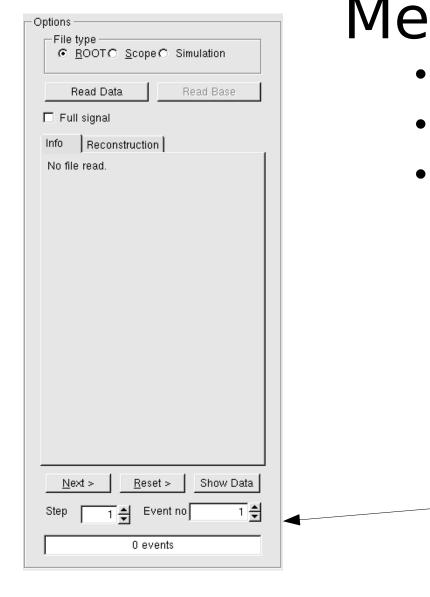
- User interface based on a GUI library (part of the ROOT framework)
- Installation via Makefile
- Unit testing methodology (BOOST)
- Code documentation (Doxygen)
- User documentation (J-Pet report 20/2013)

Supported input formats

- Signal database (ROOT)
- Single signals from oscilloscope
- Simulation data
- Experimental data

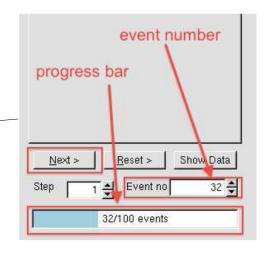
Graphical User Interface

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| Options | Display |
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| Step 1 🛨 Event no 1 🛨 | |
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Menu

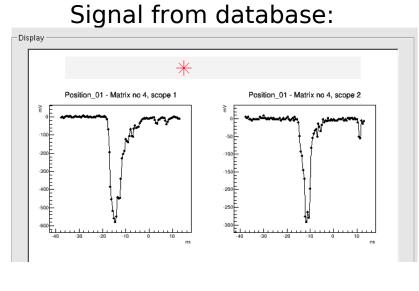
- File type checkbox
- File information
- Display options
 - Reconstruction
 - Event traverse
 - Optional full signal



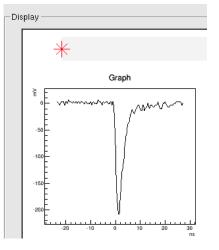
Simple visualization of the hit position

| Display — | | | |
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| | Position_01 - Matrix no 7, scope 1 | Position_01 - Matrix no 7, scope 2 | |
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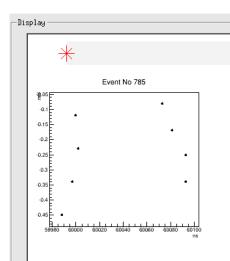
graphical display



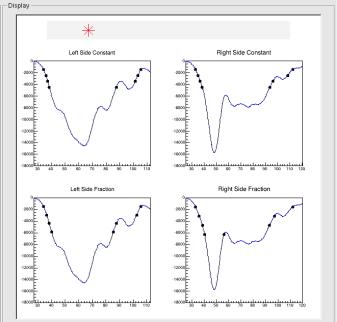
Oscilloscope:



Experiment:



Simulation:



Usage of GUI

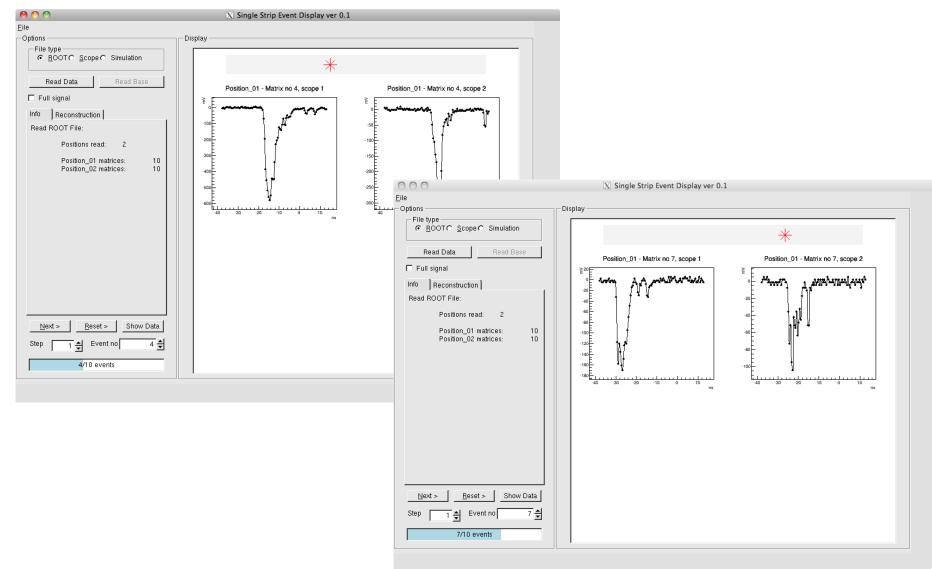
- 1. Select file type.
- 2. Open file and read data
- 3. Display full signal
- 4. Show file info
- 5. Plot data
- 6. Jump to next event (plot).
- 7. Set jump rate.
- 8. Set event number.
- Clear display and set step and event no values to 1.

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| 6 Next > 9 Reset > 55how Data 7 Step 1 € Event no 1 € 8 | |
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Signals from database

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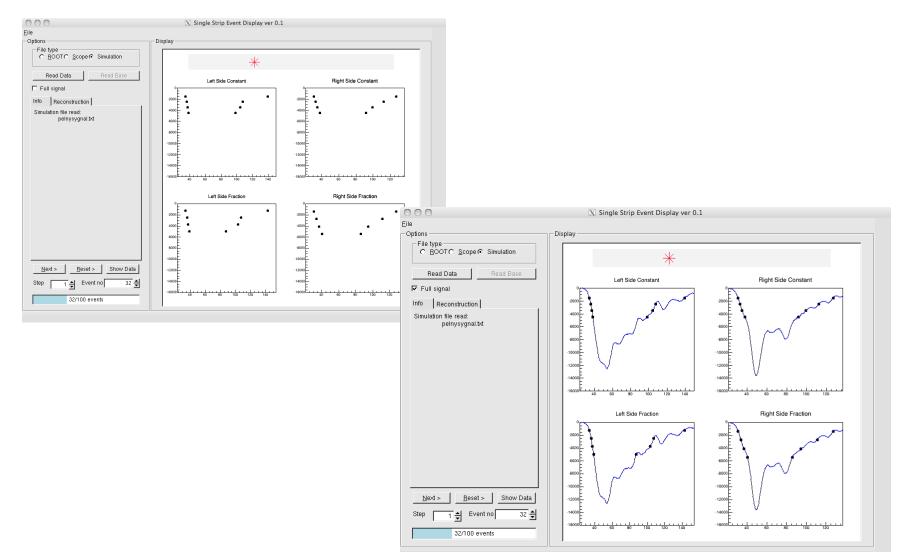
Signals from database



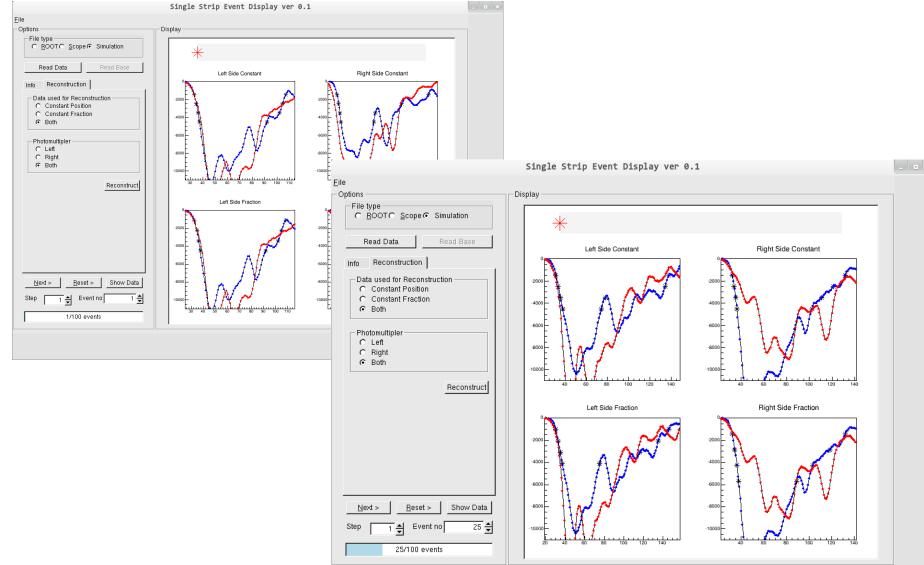
Simulation file

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Full signal



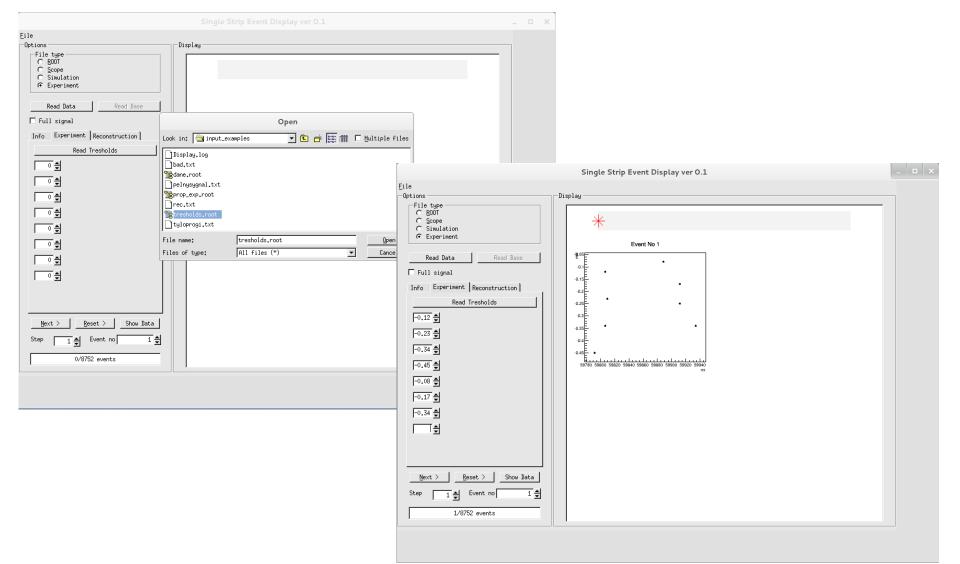
Fake reconstruction



Oscilloscope file

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Experimental file (setting thresholds)



Reader classes

- Every input format is processed by a dedicated class (called Reader):
 - EDRootReader
 - EDScopeReader
 - EDSimReader
 - EDExpReader

Summary

- Program is ready to use.
- Possibility to add external modules (reconstruction procedures etc)
- More information about the application can be found in:

J-PET UJ Report 20/2013