



# Status of Onboard Filter & Ground Software Integration

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SLAC Ground Software Workshop: 15 July 2003

# Tasks

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- Integrate onboard filter with GlastRelease
- Verify filter logic and function
  - Compare Event Display & ntuple variable distributions with filter status code output
- Extract info from filter
  - Examine filter track finding
  - Use other quantities calculated in filter
- Use filter to evaluate impacts on science performance (mainly effective area & FOV). Guide for iteration on filter algorithms. Best fidelity by using identical code.

# Integration Status

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- A few minor changes have been made made so that the filter compiles under Windows
- The filter is integrated into Gleam via a C++ wrapper, which calls it once for each triggered event
- Input to the filter are digis formatted by the EbfWriter package
  - EbfWriter puts one EBF formatted event into the TDS
  - The filter takes this event from the TDS and processes it
- The filter returns a 32-bit status code that contains basic information on event processing and the veto bits
- Write the 32-bit status code to the MeritTuple as two words: (FilterStatusCodeHi and FilterStatusCodeLo)
- Continuing detailed checking of everything now.

# Integration Status...continued

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- Information about tracks, etc., not yet extracted
  - This is the next main task after the logic is verified
- The “OnboardFilter” and “EbfWriter” packages are uploaded to CVS, but not yet included in the Gleam and GlastRelease requirements files
- Documentation on the filter’s logic is being updated for public release



# Verifying the Filter's Logic

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- Going through events to verify that the filter works as desired
  - Looking at the event display, ntuple variables, and filter status code – checking for consistency
  - Stepping through filtered events with debugger
  - Checking logic, missed tracks, etc.
- Until operation is verified, we don't recommend that it be used for analysis
  - The possible logic change may impact the veto rate significantly



## Next Steps

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- Finish integration into GlastRelease
- Finish verification of logic and function
- Extract filter-generated info (tracks, etc.). Make tracks and other objects available in the TDS.
- Calculate impacts on science performance. Evaluate tracking algorithm.