Overview of Tasks

Glast LAT Calibration Unit Beam Test at CERN

11/8/2005
Task list

1. Beam test plan (LAT-DOC)
   1. Define measurements, required statistics, expected data-taking time and configurations
   2. Identify satisfactory minimal set of measurements that cannot be missed for successful test run
      
      In preparation by coordination group
      Requires input from simulations and analysis

2. Simulations
   1. CU geometry
   2. Test configurations (angles, energies, interaction with other detectors on beam line) + beam properties (bremsstrahlung @ T9 + known spectra for H4) → provide secondary beam as input to CU simulation
      1. Provide interface to Gleam for generation of multiple particle events
   3. Generation of MC data sets - SLAC pipeline
   4. LAT-MC tuning
      1. G4 physical processes
      2. Variables for data analysis
3. Data Analysis

1. Identification of tools (recon package, n-tuple definition, macros)
2. Development of analysis algorithms
   1. Backsplash (TKR multiplicities, rates, topologies)
   2. Hadronic shower modeling
   3. EM shower (calibration, energy corrections at different energies)
   4. PSF and effective area
   5. Background rejection
   6. Trigger and acquisition with high self-trigger rates
3. Test of tools on simulated data
4. Data analysis and pipeline infrastructure (local/remote/network connection)
Task list

4. Detectors preparation and readout DAQ
   1. Calibration unit (CU)
      1. CU integration
      2. CU MGSE with 3-axis movement + rotation
      3. EGSE system for CU readout
   2. Ancillary systems for Particle ID
      1. Requirements and experimental setup
      2. Photon-tagging station and related DAQ; AGILE setup has 4 si-tracking planes + 3 trigger scintillators, ~2.5% p resolution
      3. TRD for trigger on low contamination high energy $e^{-}$ beam; INFN/Bari has a fast TRD (16 modules, 16+16 straw-tubes + 5cm C-fiber radiator) providing trigger in ~100ns with ~1 % $\pi$ contamination at 90% $e^{-}$ trigger efficiency, better than $10^{-3}$ rejection with offline (see *NIM A455 (2000) 305*)
   3. Beam line diagnostics: Cherenkov counters, CEDAR

3. CU and ancillary systems DAQ integration
   1. Data streams merge test prior to CU delivery to CERN
   2. Lab test with partial system
   3. End-test with full system at CERN prior to installation into experimental area
Task list

5. Logistics and infrastructure

1. Interface with CERN
   1. contact with PS/SPS coordinator and liaisons physicist
   2. Run coordinator, GLIMOS, CERN contact persons
   3. Safety (radiation protection, flammables, gas)
   4. Beam line operators (installations, crane, magnet, power, gas)
   5. CERN financial accounts
   6. CERN store
   7. Tunnel permit
   8. Customs/shipping

2. Network
   1. Computer accounts
   2. Laptop registration