"We want YOU, for the Panda Computing development!"

[http://panda-wiki.gsi.de/cgi-bin/view/Computing/PandaRootWorkPackages](http://panda-wiki.gsi.de/cgi-bin/view/Computing/PandaRootWorkPackages)

# Main items

Framework
(M. Al-Turany)

Software Trigger
(Klaus Goetzen)

Global Tracking
(Gianluigi Boca)

Detector Specifics
(....)

PID
(Stefano Spataro)

Physics Simulations
(CC&PC)

Physics Analysis
(Klaus Goetzen)

Generators
(Martin Galuska?)

GRID
(Radek Karabowicz)

Service&Coordination
(CC)

# Open problems/tasks

**EMC**

1. Simulation

   Implementation of dead material for barrel and backward endcap.

2. Digitization

   - Time-based simulation including pile-up study at the level of waveform.
   - Implementation of feature extraction algorithm developed for FPGA at KVI.

3. Reconstruction

   - Cluster reconstruction algorithm after time-based digitization
   - Pre-Shower detection and correction
   - Split-Off recognition (hadronic/electromagnetic)

4. + Neverending optimization of existing code wherever it's necessary.

**STT**

## STT Workpackages

o   Implementation of electronics following the real project of Cracow

o   Implementation of a new geometry:
  - Up-to-date
  - With passive
  - Easy to change (CAD → ROOT geometry description)
  - Fast at runtime

o   New parametrization with double gaussians for dE/dx to take into account the long tail in the truncated mean distribution

o   Implement the STT part of code for the time based simulation

# Workpackages <span style="color:red">**GLOBAL TRACKING**</span>

**pattern recognition**

❖ Study the curling tracks

❖ If there you have new ideas, try different solutions for the primary/secondary track finder, particularly for time gaining

**GENFIT**

❖ Test the new revision in pandaroot, particularly:
  ❖ the deterministic annehaling filter (to eliminate outliers)
  ❖ the RKTrackRep *vs* the GeaneTrackRep

**GEANE**

❖ study the electron tracking

## Things to do: Reconstruction

**PID**

- Validate momentum reconstruction for different particle kinds
- Validate momentum reconstruction for different particle hypothesis (kalman)
- Study and improve track correlation (momentum-wise?)

## Things to do: Reconstruction

- Improve and make faster the correlation
- Proper set of correlation windows, as a function of momentum?
- Study and improve the anti-correlation for neutrals
- Correlation with forward PID detector is almost missing
- ...

## Things to do: Algorithms

- Evaluate efficiency and purity for each algorithm (standard macro)
- Evaluate perfomances by combining different algorithms (global PID)
- Global MVA analysis
- Influence of Geant3/Geant4
- ...

## Things to do: Algorithms

- Forward PID completely missing
- EMC MVA method for $\pi^\circ$ identification?
- MDT Muon identification with MVA
- MDT neutral particle identification?
- Use PID for analysis!!!!
- ...

# Open Tasks for Analysis Tools

**ANALYSIS**

- **Fitting**
  - Sequential application of multiple fitters/constraints (code consistency, validation)
  - Tree Fitter: Setting all possible constraints for a composite decay tree and global fit (complete implementation)
  - (More) user friendly fitter interface

- **Analysis output**
  - Simple-to-use NTuple output module for interactive refinement of analysis in CINT

- **Simplified analysis**
  - Steer PID selection/combinatorics/fitting by a simple meta language configuration

# Release Manager

**SERVICE TASKS**

- **Title:** Release manager

- **Coordinator:** Johan Messchendorp

- **Names involved:**

- **Supervisor(s):**

- **Priority:** HIGH

- **Description:** The PandaRoot software and its developments are presently guided by a release policy following four different branches: development (no restrictions), trunk (has to compile and build), stable (has to compile, build and run QA macros), and production releases (regular snapshots of the stable branch). The tasks of the release manager are
  1. to decide and consult with the PandaRoot/FairRoot developers for upgrading to new external package releases;
  2. to trigger/communicate to developers in the case a policy of a branch is not fulfilled;
  3. to regularly update the stable branch and prepare for production release;
  4. to regularly (every three months) make a new production release;
  5. to document the changes on the Wiki for each production release.

- **Pre-requisites:** release branches and policy in PandaRoot, running dashboard, regular updates of QA macros (all available).

- **Required expertise:** sufficient knowledge in programming (C, C++); understanding of usage subversion; sufficient overview of the different individual software packages in PandaRoot.

- **Estimate humanpower:** 1/2 day/week

- **Start date:**

- **Finish date:**

- **Status summary:**

- **Items done/in progress/not done:** not applicable

- **Documentation:**

- **Comments:** The frequency of making a new production release might change in the course of time, depending on the requests of the collaboration.

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(....)

5. Physics Analysis
(Klaus Goetzen)

6. Physics Simulations
(CC&PC)

7. PID
(Stefano Spataro)

8. Generators
(Martin Galuska?)

9. GRID
(Radek Karabowicz)

10. Service&Coordination
(CC)

THANKS TO STEFANO
AND THE TORINO CREW FOR
THIS SUCCESSFUL WORKSHOP!

STEFANO SPATARO, FACEBOOK