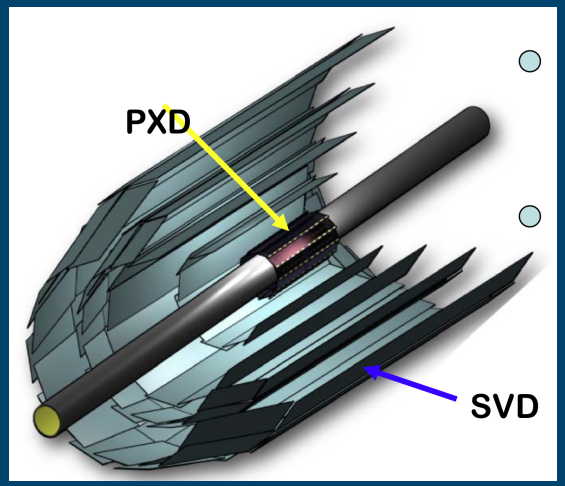
HEPHY

Institut für Hochenergiephysik

Status and Plans of Tracking Studies by the Vienna Team



Winfried Mitaroff

Belle II Computing Workshop

Krakow, 16-18 June 2010

Status of Belle II Software

- **Munich** (Andreas Moll et al.):
  - First PXD/SVD simulation studies, using Mokka + Marlin;
  - Optimization studies for the PXD parameters.
- **Vienna** (Rudi Frühwirth & Moritz Nadler):
  - Material budget measurements by the “alignment method”;
  - Feasible only for the CDC, not for PXD/SVD.
- **Vienna** (Wolfgang Waltenberger):
  - Vertex Reconstruction Toolkit (RAVE): embedded in Marlin;
  - New: Gaussian Sum Filter (tested standalone).
- **Vienna** (Manfred Valentan):
  - Fastsim tool (LiC Detector Toy): upgrade needed for Belle.

Plans for Belle II Tracking (1)

- **New Track Reconstruction:**
  - Module to be embedded in the new Basf2 framework;
  - Development to be based on the GENFIT skeleton;
  - Collaboration Vienna – Munich (Christian Höppner et al.).
- **Expect from the CDC team:**
  - Standalone PR (e.g. resolving left-right ambiguities) like old TRASAN + first track fit in CDC;
  - Cheater option (passing MC truth) for test purposes.
- **Development Phase 1:**
  - Augment GENFIT (DAF, GSF, inclined SVD plaques);
  - Use inwards extrapolated CDC tracks, add PXD/SVD;
  - "PR and Precision Track Fit" based on the DAF.

Plans for Belle II Tracking (2)

- **Development Phase 2:**
  - Standalone processing of PXD and SVD measurements;
  - "Pattern Recognition" part based on alternative methods;
  - "Precision Track Fit" part based on the DAF.
- **Development Phase 3 (later):**
  - Outwards extrapolation of standalone PXD/SVD tracks;
  - Search for and add orphan CDC hits by the DAF.
- **New SVD Simulation:**
  - Geometry data base: Vienna (Immanuel Gfall) ;
  - Digitizations: Prague (Zbynek Drasal);
  - Suggest a closer collaboration Vienna – Prague.

Plans for Belle II Goodies

- **RAVE Vertex Reconstruction:**
  - Toolkit planned be ported to the new Basf2 framework;
  - Requires new “glue code” (like marlinrave) to cope with the event model (undergraduate student job ?);
  - RAVE’s kinematic fit performance is still to be evaluated against the hard requirements of Belle II physics.
- **“LiC Detector Toy” (LDT):**
  - Fastsim tool, used so far for optimization of ILC detectors;
  - If to be used for Belle II, an upgrade of the detector model would be needed (undergraduate student job ?).
- **Next Tracking Workshop:**
  - Munich, July 15 – 16 ?