Activities in Computing & Software at BESIII & SBELLE

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Review meeting on the JSPS-CAS Core University Program IHEP, Beijing, April 8, 2009

Upgrade projects at IHEP/KEK

- Accelerator BEPC-BEPCII luminosity X100
- Detector BESII-BESIII

totally new

- Physics Tau-Charm physics Glueball
- Period
 2004-2008
 finished

KEKB-SKEKB luminosity X50

BELLE-SBELLE partly new

> **B** physics **CP** violation

2009-2012 starts

What have we learned from Belle?

- Algorithms in calibration and reconstruction MDC(CDC), EMC(ECL), and TOF
 Fast tracking, event-start-time determination
- Methods in Monte Carlo simulation Digitization in EMC and TOF MC-background mixing
- Data management in computing Automatic data processing mass production

What experience do we have with BESIII?

- Up-to-date software used at BESIII
 Software framework GAUDI (BOSS)
 Simulation toolkit GEANT4 (BOOST)
 Detector description GDML
 Physics Analysis ROOT
- **BESIII offline software works as expected** Successful with real data and MC data Easy to use for developers and users
- They are being considered for SBELLE

BESIII Offline Software System (BOSS)



What can we contribute to SBELLE?

- Framework design BASF-ROOBASF, GAUDI, ...
- Simulation with GEANT4
 Detector optimization
 Geometry description
 Full simulation
 Trigger simulation
- Event reconstruction Focus on new detectors

What have we done for SBELLE?

- 6 experts from BESIII joined computing/software group in SBELLE
- Discussed with coordinators about the software work with top priority
- Two postdocs are working at KEK, simulating the new CDC with TRACKERR and GEANT4

Special thanks to

Y. Sakai, T. Hara, N. Katayama, H. Kichimi, Y. Iwasaki, H. Ozaki, K. Trabelsi, K. Abe, S. Uno, O. Tajima, C. Imai, ...

Core University Program

RESEARCH REPORT

Date Dec. 22, 2008

Visiting scientist: (name) Prof. Huaimin Liu, IHEP

Host scientist: (name) Prof. Yoshihide Sakai, KEK

Research period: (from) <u>Dec. 9, 2008</u> (to) <u>Dec. 22, 2008</u>

Research subject: The Super Belle Experiment

The result of your research: (other paper and appendixes can be attached)

- 1. Participate the 1st Open Meeting of the SuperKEKB Collaboration, Dec. 10-12, KEK.
- 2. Join the meetings on Computing (12/10), MDC (12/11) and SVD (12/15).
- **3.** Discuss with T. Hara (software coordinator) on our possible contributions to sBelle computing: detector simulation with Geant4, geometry management with GDML and trigger simulation. Two experts from IHEP, Beijing will join and work on these.
- 4. Discuss with H. Kichimi on the TOF calibration, Mu-pairs are better than Bhabha events in calibration (12/17)
- 5. Discuss with N. Katayama on the future use of GDML and hadron/optical processes in simulation at sBelle, our experience with BESIII (12/19).
- 6. Exchange ideas about the drift chamber simulation at Belle and at BESIII with Y. Iwasaki.(12/15)

Comment to the Core University Program:

<u>This program is very helpful for scientists to exchange their</u> <u>ideas and work together, and it is extremely important for</u> international collaboration.

(Name in print) <u>Huaimin Liu</u>

Thank you!