

Simulation and Configuration Management

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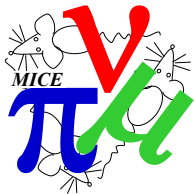
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Experimental
Particle Physics



Introduction

- MICE is a precision experiment.
 - ▶ Simulation is required to check and validate results.
 - ▶ Requires precision knowledge of location of detector elements and calibrations.
- Need a consistent record of detector locations and calibrations.
 - ▶ Should be indexed with respect to runs and time
 - ▶ Should be updateable.
 - ▶ Should be easily accessed by software.

Configuration Database (CDB)

- Bi-temporal database.
 - ▶ Information is stored both by entry date and event date.
 - ▶ If an event has two different pertinent entries, later entry supersedes old.

Contents of CDB

- Detector calibrations and maps for TOF, EMR, KL, and Trackers
- Geometry description
 - ▶ Communicates surveys of the hall to the software.
- Run specific information
 - ▶ Scalars
 - ▶ Magnet currents (conventional and super-conducting)
 - ▶ Diffuser and absorber settings.

Maintenance of CDB

Writing is Local and Controlled.

- Additions to master database can only be done from inside MLCR
- Run information is recorded by run control during data collection.
- Calibrations are by designated individuals
 - ▶ Completed and written at beginning of data collection.
- Geometry is updated as surveys become available.
 - ▶ Procedure exists to translate engineering drawings to software readable format
 - ▶ Validations must be passed prior to upload
- ADC/TDC maps written and maintained by DAQ owners.

Access to CDB

Reading is open to all

- Access is allowed through a slave server.
- Scripts exist to download information from server as needed.
- In most cases downloads may be done by run number or by date.
 - ▶ Geometry also allows download by internal specifier.
- CDB software maintained by Janusz Martyniak.
- CDB servers have been operating for the last two years.

Simulation Generation

Simulations optimized to replicate data runs.

- Running scripts take configuration directly from CDB.
- Simulation settings also to be stored on CDB.

Plan to run simulations on the Grid

- Such simulations must have all settings either in CDB or software defaults.
- To date large local batch simulations have been run.

Facility for prospective configurations and systematics exist.

- Upload post-dated configurations to the data base.
- i.e. All Step IV configurations to date have been uploaded with year 2034.

Summary

- Configuration data base was developed to maintain configuration information.
 - ▶ Has been functioning for the last two years.
- Detector, geometry, and run information is stored.
 - ▶ Can be accessed by specific run or date.
- CDB also to be used to maintain batch simulation configurations.
 - ▶ Absolutely necessary for the management and use of Grid computing.