Introduction to LHC@FNAL

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July 21, 2005

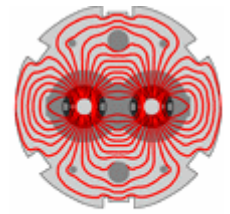# Requirements Review
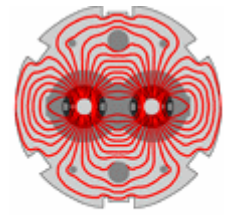
Agenda:

- **7:30 am**   **Executive session**
- **8:00 am**   **Introduction to LHC@FNAL (Erik)**
- **8:10 am**   **Requirements for CMS (Patty)**
- **8:50 am**   **LHC Accelerator Requirements (Elvin)**
- **9:30 am**   **Executive session**

What is LHC@FNAL?

1) **Allow experts located at Fermilab to participate in CMS and LHC commissioning and operations.**

   - Hardware and software necessary to participate effectively in CMS and LHC.

2) **Facilitate communication and help members of the LHC community in North America contribute their expertise to CMS and LHC.**

   - An extension of the CERN Control Centre (CCC). For example, to assist members of US/LARP in training and data analysis.

   - An extension of the CMS Control Room. For example, to provide a call center for US-CMS collaborators to access information about CMS **and** the LHC accelerator.

3) **A unique opportunity to have detector and accelerator experts in close proximity to each other solving problems together.**

LHC@FNAL Activities
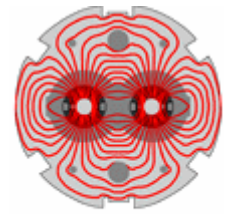
We have developed various scenarios and envision the following types of activities for LHC@FNAL:

- Participate in CMS shifts during commissioning and operations

- Participate in LHC hardware & beam commissioning and operations

- Monitor data quality for CMS

- Monitor LHC accelerator components (e.g. systems built in the U.S.)

- Analyze the monitoring data for CMS and LHC

- Develop monitoring capabilities for CMS together with the LHC Physics Center (LPC)

- Develop software for the LHC

- Provide access to monitoring data and analysis results

- Provide training and data-analysis facility for members of US/LARP

- Provide a rapid response call center to get experts located in North America connected to CERN (data access, operational status, etc.)

LHC@FNAL Requirements
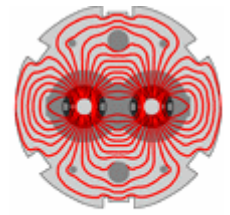
Requirements were extracted from scenarios we developed for LHC@FNAL.

- Two subgroups (accelerator and detector) independently developed scenarios and extracted requirements

- Weekly meetings to "compare notes"

- Recorded meetings to have a record of discussions, and to experiment with the technology

LHC@FNAL requirements document has four sections:

- Section 3.1 – CMS Experiment Requirements (Patty)

- Section 3.2 – LHC Accelerator Requirements (Elvin)

- Section 3.3 – CMS/LHC Combined Requirements (Elvin)

- Section 3.4 – Constraints (Patty)