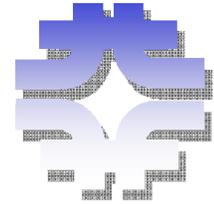


LARP

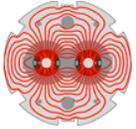


LARP Instrumentation Group

Summary

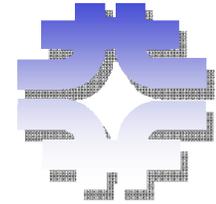
A. Ratti

April 28, 2006

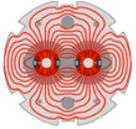


LARP

Outline

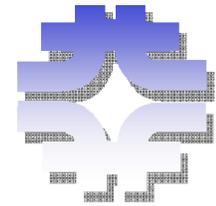


- Progress report from three instruments
- Group issues, solutions
- Integration plans at CERN
- Conclusions

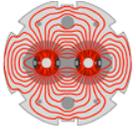


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Tune Feedback

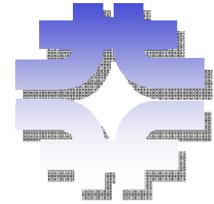


- Tune Feedback
 - RHIC run VI turned plans around
 - RHIC turned on with Tune and chromaticity feedback
 - Support of SPS run delayed to later this year
- Spending rate above plan due to RHIC run
 - Recalculating spending plan for the year
- Can the same hardware be used for emittance growth suppression??



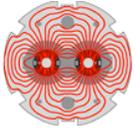
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Schottky monitor



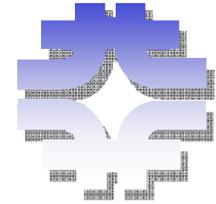
- Design nearly complete
- Generating production prints for CERN's fabrication
- FDR at CERN on June 22
- Additional deliverable is analog processing electronics

- Spending on track with FY06 plan
- Task will be done in 2006
 - HW commissioning support planned after installation
 - Beam commissioning support by LARP commissioning

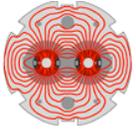


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Luminosity monitor

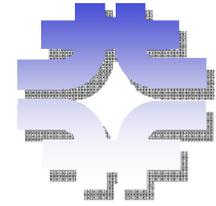


- Successful design review on April 24
 - Recommended to start construction as soon as possible
 - Schedule is tight for first article delivery
 - Prototype installed in RHIC for early tests and cross calibration
 - Planned rad hardness tests at CERN ISOLDE source
 - Extensive integration efforts at CERN
- Spending on track with plan
 - But not linear, will increase significantly in the summer with device construction

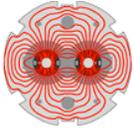


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DAQ workshop

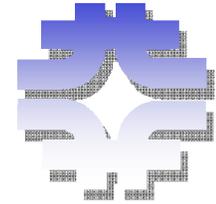


- Attended by representatives of all labs
- Daryl Bisop (TRUIMF), designer of the DAB board, gave a comprehensive description of the board design and its firmware programming
- Rhodri Jones did a live demonstration of the hardware functionality at LBL
 - Used signal from pulse generator, processed by LUMI analog shaper
- Round table discussion on how to implement system at LARP labs

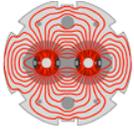


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DAQ for LARP instruments

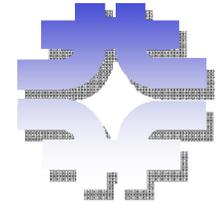


- Real Time OS problem to compile LynxOS at US labs
 - This stalled our efforts for months
 - Licensing problem
- LabView proposed by CERN
 - Use VME-USB bridge card
- LARP labs can develop expert Vis in LabView and deliver to CERN
 - Uses the bridge card in the US
- CERN implements the FESA interface, provides LabView connection
- Expert panels available through CERN's FESA
- LARP labs provide functional specification of memory interface
- CERN develops GUIs for device controls
 - Both expert and operator

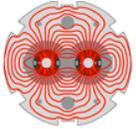


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Open Issue/Opportunity

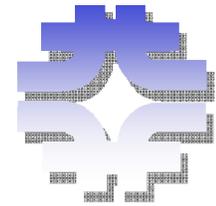


- LHC@FNAL opens the door to experiments or observations at LHC directly from LARP sites
 - FNAL is leading the way
- Ideal for ‘passive’ devices
 - I.e. Schottky monitor, luminosity monitor
 - Could make present effort on Shottky more effective
- Not clear how much will be available by commissioning
 - CERN controls must be deeply involved for this to happen
 - Priorities may not be aligned
- CERN is now looking at ways to facilitate

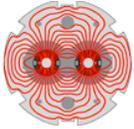


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Common Instrumentation Plans

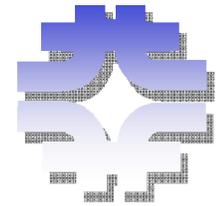


- Commissioning teams created at CERN, LARP plans to provide instrumentation commissioning support
- New task proposals have been presented in a common session
 - AC dipole
 - Synchrotron light based diagnostics
- Instrumentation group will do its assessment with CERN input



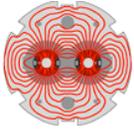
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Integration Plan



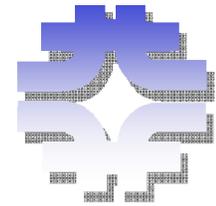
Planned documentation for each instrument

1. FS - Roles and Responsibilities
 1. Defines who does what, when
2. ES- Technical Specification
 1. Complete description of the device, its interfaces, its requirements....
3. ES - Functional Spec (of DAB 64x interface)
 1. Definition of what functions and features are included in the data acquisition system
4. ES - Memory Map of Firmware
 1. How the data is transferred to the control system
5. Any other document
 1. (ES) Safety, installation, HW checkout and commissioning,
6. FS - Acceptance Plan and signoff list
 1. Contains a list of deliverables from LARP to CERN
 2. Signoff list
 3. Once accepted, defines the end point of LARP's contribution to the instrument



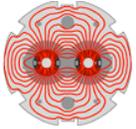
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Implementation



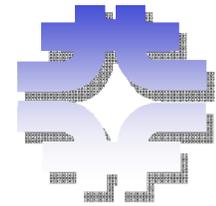
- The above docs have approvals on both sides
 - CERN and LARP
- PIs are the single points of contact at each side of the ocean
- Documents reside in EDMS and in LARP's databases

- We aim to have the first two and the last one ready for the DoE review



LARP

Conclusions



- All instruments showed significant progress
- Spending on track with plan
- Productive discussions both on technical and planning side
 - Common integration roadmap with CERN
 - DAQ hardware ready, software interfaces and path defined
- All instruments are reviewed yearly before next year's task sheets are evaluated
- Integration with commissioning team to carry these instruments into LHC operations