

**LARP**

***BNL - FNAL - LBNL - SLAC***

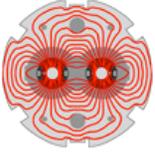
**BEAM INSTRUMENTATION and RF**  
**5 YEAR PLAN**

A. Ratti

LARP Collaboration Meeting XII

Napa

Apr. 9, 2009



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## Existing Instruments

As the LHC beam commissioning starts we plan to provide local and remote assistance to all instruments:

Schottky\*

Tune Feedback (and Chromaticity studies)\*

Lumi

AC Dipole

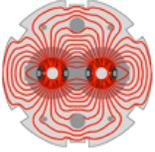
Contribute to hardware and beam commissioning through dedicated trips to CERN as well as data analysis in the US

Contribute to the growth of the LHC and the detector's performance

Funding Travel and limited effort through full LHC performance

Continued fractional Post Doc funding for AC dipole

\*Not presented at CM12, but alive and well



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## Other Instrumentation Activities

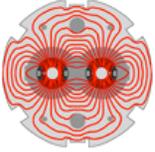
Synch light monitor studies

Continue expanding the system and help CERN instrument 2<sup>nd</sup> ring  
Actively participate in measurements and beam studies

Fund 0.5 FTE and \$20k/yr travel until FY11

Other collaborative effort can be defined after LHC startup, when the performance of existing systems will be known

Additional injection chain improvements and machines are aging and new ones are replacing them



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## Injectors Upgrades

Linac4 and H<sup>-</sup> diagnostics

Demonstrate feasibility of H<sup>-</sup> emittance measurement system at existing facility

Move to a construction project if method is proven

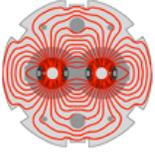
Close collaboration between CERN (and other European Labs) and US labs (coordinated by LBNL)

From FY10 to FY12, 0.75 FTE/yr, \$75k materials, \$30k/yr travel

IPMs

through studies dedicated for PS2

See Uli's plans



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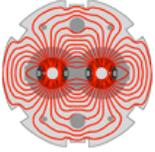
## LLRF Modeling and Development

Continue implementing existing models to the LHC and develop dedicated algorithms

Modeling support needs to parallel the growth of LHC performance

Plan involvement well into operations to support performance optimization

Continue to ~FY12 at flat level of funding – 1.5 FTE/yr (including one PD) + \$40k/yr travel



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## Comments

Unlike other LARP tasks, no task takes 10 years in instrumentation and LLRF

Technology and methods improve and we plan to continue contributing to LHC performance improvements on a task to task basis

- ie. Activities in the US for next generation digital BPM processing systems
- CERN interest in rad hard diagnostics
- Technology obsolescence

Significant contributions made also through LARP labs resources  
this may or may not continue