Recent MAP Reviews

Front End Recommendations

Front End Studies Meeting

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MuPac Recommendations

General but also apply to the Front End:

- Perform a global optimization of the cooling channel parameters to maximize the MC/NF performance.
- Find additional opportunities for benchmarking the cooling simulation codes.
- Include all possible heating effects in the cooling simulation codes and explore possibilities to benchmark against experimental long-term emittance evolutions.
- Show beam gymnastics through the entire accelerating system, including at least beam loading effects, by a front to end simulation.
- Study if the 300-mm aperture in 201-MHz cavities is necessary.
- Develop clear definition of the “safe” accelerating gradient.

MuPac Recommendations II

Front End Specific:

- **Study the robustness of the front end RF system, with its large number of cavity frequencies and voltages, and determine an approach for further optimization of the system.**

DOE Review Recommendations

Magnets Recommendations

These are general recommendations that also applies to the Front End magnets

- **Determine if the magnetic coupling between neighboring magnets in the cooling systems has the potential to cause a chain reaction whereby all magnets are affected if just one of them quenches. Design a mitigation strategy, if necessary.**

- **Produce a list of all magnetic elements that give number, radius, field, length and the radiation deposition.**

Beam Dynamics and Simulations

Some general comments that apply also to the Front End

- **Continue to work with the SLAC code group for the RF design and breakdown studies, and for field emission simulations.**
- **Develop, over time, a more end-to-end simulation capability that can couple sub-systems together to the extent required.**
- **Carry out benchmarking and verification studies as needed where key physics problems are concerned.**

RF Systems

- **Develop a table defining performance parameters to clearly state operational limits for different cavities in high magnetic field. Define safe accelerating gradient. (November 2012)**

- **Explore ways to expedite the delivery of the new magnet to be able to test the 201 MHz cavity in high magnetic fields in FY13.**