



Tevatron IPM Expectations



Ron Moore

Fermilab – Tevatron Dept.



The Past



- IPM was a Run II Upgrade Project
 - Infrastructure installed in tunnel during 2004 shutdown
 - First detector installed late 2005; 2nd detector installed during 2006 shutdown
 - Review Oct 2007 for completion needs, implementation of ACNET interface
- Primary goal = turn-by-turn measurements of protons and pbars at injection and up ramp
 - Identify and help correct emittance blow-ups
- Successful demonstrations, but only with partial system
 - Various firmware/software bugs, some hardware & vacuum issues
 - Only one plane or the other available
 - Relied upon expert (Andreas) for use
 - Some ACNET devices and applications already in place
- This meeting less about specs, more about making IPM operational
 - Expertise and manpower not all in AD, scattered across lab
 - Need an MOU for maintenance à la BPMs?



Current Tevatron Expectations



- Make system fully operational
 - Both planes, all channels, for both beams simultaneously
 - Novice-friendly (no expert reliance to extract desired data)
 - ACNET app(s), state-driven specs, datalogging, display TBT data
 - Documentation (end users and maintainers)
- Turn-by-turn beam size measurements at injection
 - **Crucial** to help resolve lingering questions on MI/P1/TeV lattice match
- Bunch-by-bunch emittance measurements on ramp (squeeze?)
 - **Desired** to help diagnose emittance growth
 - **Nice** to have ~1 Hz pbar emittance data for pbar jacking at flattop
- Mutual understanding on future maintenance, implementation of any new features



References



- Conference papers / results:

<https://beamdocs.fnal.gov/AD-private/DocDB/ShowDocument?docid=2826>

<https://beamdocs.fnal.gov/AD-private/DocDB/ShowDocument?docid=2473>

<https://beamdocs.fnal.gov/AD-private/DocDB/ShowDocument?docid=2340>

<https://beamdocs.fnal.gov/AD-private/DocDB/ShowDocument?docid=2254>

<https://beamdocs.fnal.gov/AD-private/DocDB/ShowDocument?docid=1820>



References



- Hardware manuals / implementation details:

<https://beamdocs.fnal.gov/AD-private/DocDB/ShowDocument?docid=2867>

<https://beamdocs.fnal.gov/AD-private/DocDB/ShowDocument?docid=2868>

<https://beamdocs.fnal.gov/AD-private/DocDB/ShowDocument?docid=1615>

<https://beamdocs.fnal.gov/AD-private/DocDB/ShowDocument?docid=1614>



References



- IPM Review from Sept 2007

<http://indico.fnal.gov/conferenceDisplay.py?confId=1272>