

MIPP Update

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Fermilab All Experimenters' Meeting
4/11/05

- Run-plan and statistics
- detector/beam

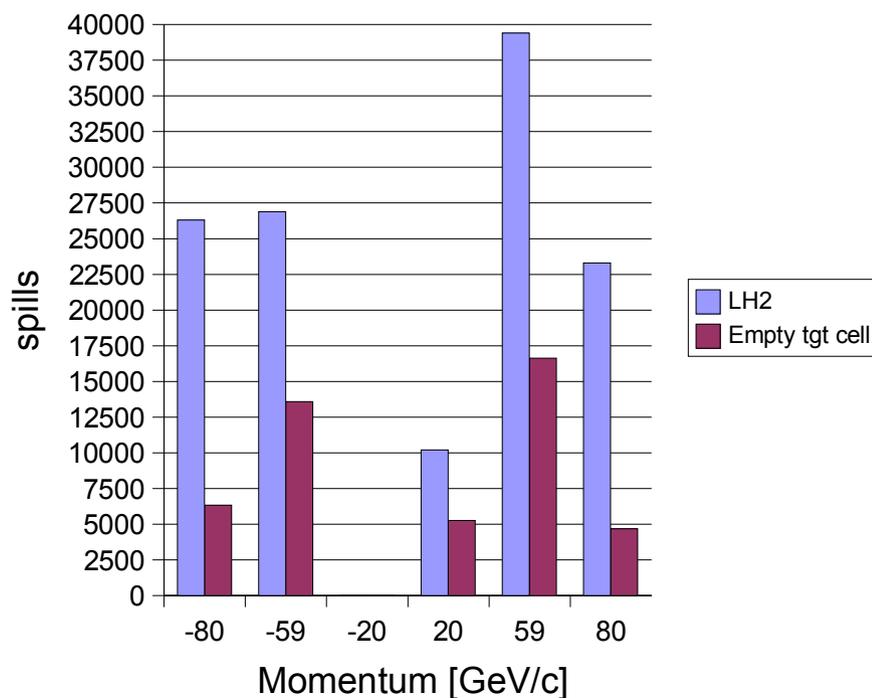
MIPP run-plan

- Without going into details...
 - MIPP is taking data for different kinds of physics
 - Scaling/Non-perturb. QCD, pA/nuclear/p-rad, NuMI/MINOS, atm. ν
 - The entire data set of ~ 75 million events is split into 3 priorities
 - $\sim 10\%$ of total (P1), $\sim 30\%$ of total (P2), all (P3)
 - The MIPP run plan includes 35 different combinations of target and beam energy (12 combinations in P1)
 - There is more good physics to do with >75 million events
 - We currently have accumulated a total of 4.36 million events (360k slow spills with beam of 0.6 sec length) since Jan.17
 - This is half of the priority 1 data set
 - Until October we expect to finish priority 1 data taking.

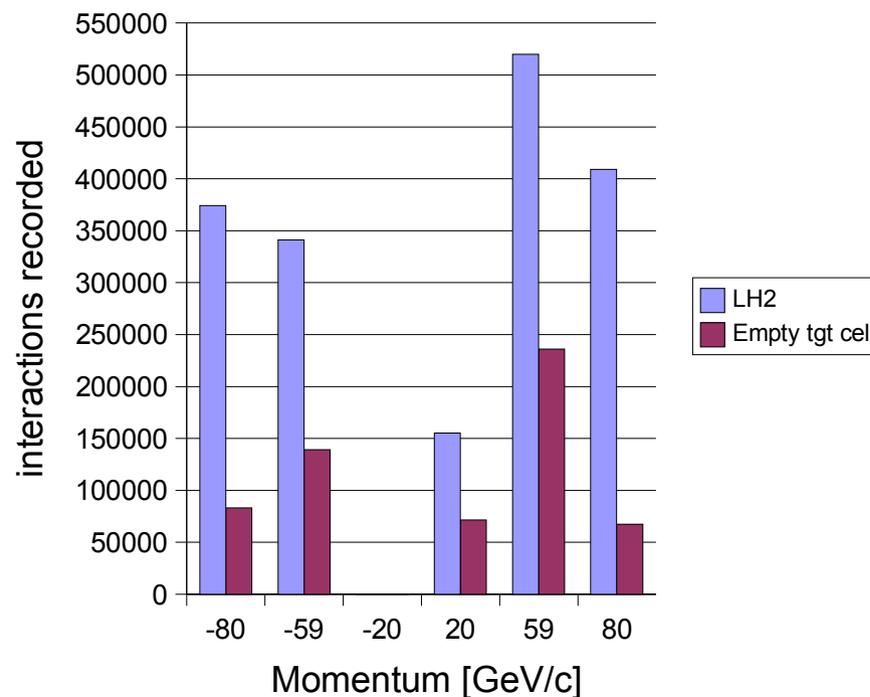
MIPP Statistics

- We continued last week to take H₂ data
 - Finish with -80 GeV/c and started on +20 GeV/c
 - -20 GeV later this week / next week, then NuMI / thin targets

Number of spills with beam



Number of interactions recorded



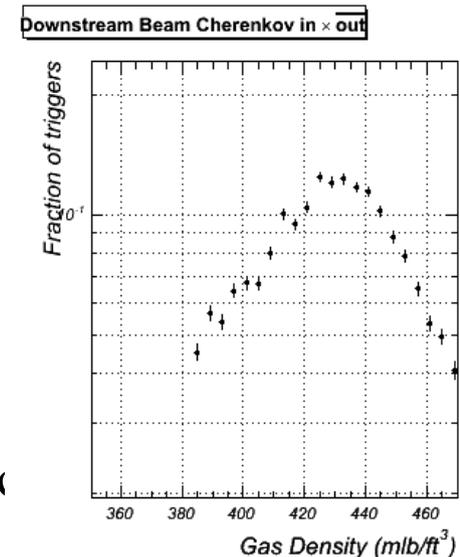
MIPP Statistics

- Numbers, numbers, numbers...

Momentum	Target	Number of spills (21s)	Number of spills with beam	Number of interaction recorded	Interactions per spill
-80	LH2	27679	26316	374256	14.22
-80	Empty tgt cell	6532	6342	83279	13.13
-59	LH2	28458	26883	341265	12.69
-59	Empty tgt cell	14379	13582	139228	10.25
-20	LH2	0	0	0	
-20	Empty tgt cell	0	0	0	
20	LH2	10631	10205	155379	15.23
20	Empty tgt cell	5310	5271	71681	13.6
59	LH2	42155	39409	519789	13.19
59	Empty tgt cell	17880	16638	236168	14.19
80	LH2	24813	23303	409266	17.56
80	Empty tgt cell	4809	4689	67449	14.38

MIPP detector status

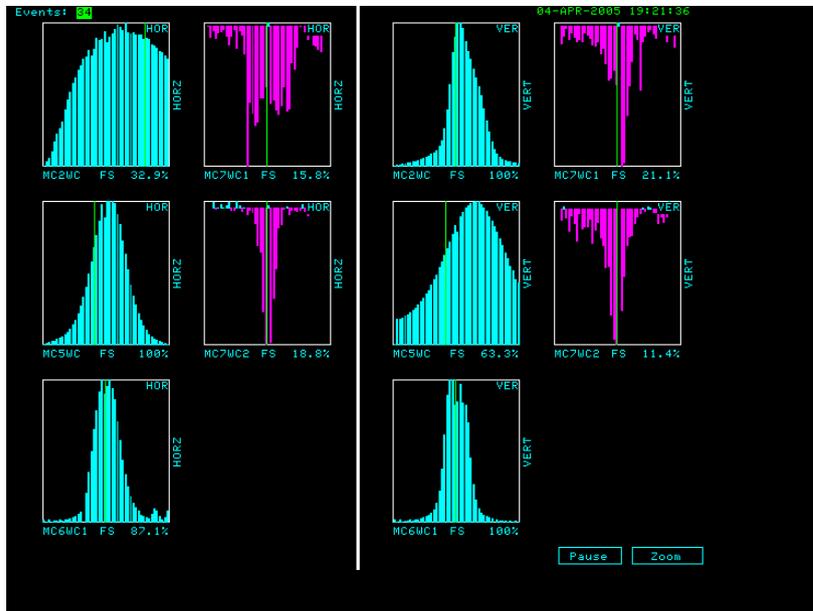
- The detector was working well last week
 - Minor problems with DC readout, some ToF channels did result in minimal downtime and hardly any impact on data quality.
- Online-Monitoring was improved to make it easier for shifters to recognize problems early. Still need to improve the event display capability in the MIPP control room.
- C4F8O gas system for low momentum beam pid in BCkov was moved into MC7 on thursday (4 hours)
 - A weakness in the original gas setup was identified and corrected in time.
- Taking pressure curves took 1 shift (8 hours) of good beam time. The C4F8O takes time to fill the BCkov counter.
- DC gas mixing system will need preventive maintenance (Methylal is eating through rubber in valves.)
 - Do not anticipate downtime for this.



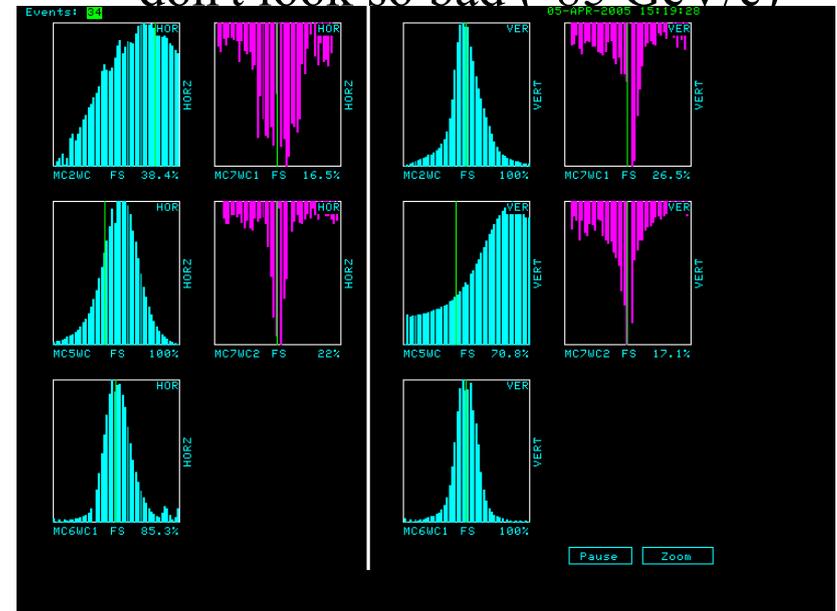
MIPP beam status

- The beam quality was not good at times.
 - E.g. Thursday: establish 20GeV/c tune at 6:30pm (after booster repair), but no good tune until 11pm, then recycler-shot soon after that.
 - External beams did respond to MIPP requests for beam tuning. Sometimes they had a hard time to get a good tune · large spill to spill variations.

Good tune (-85 GeV/c)

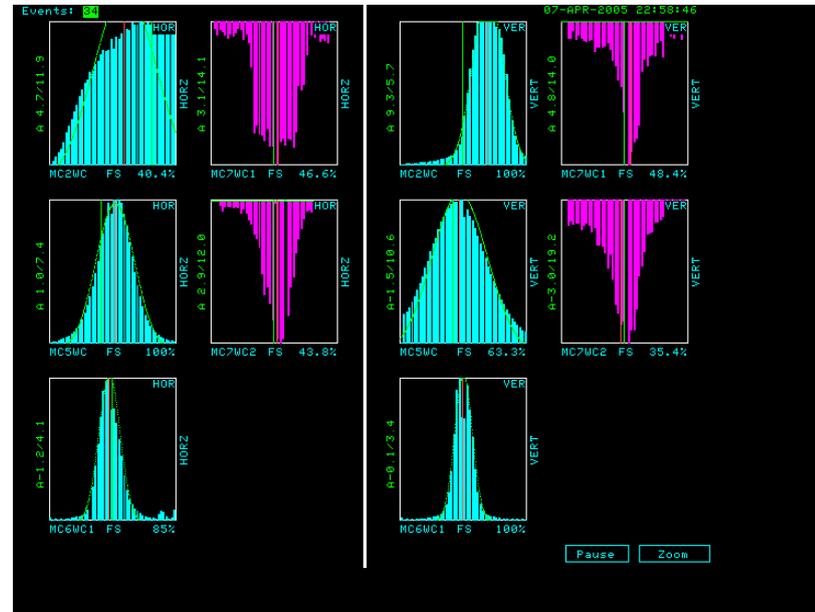
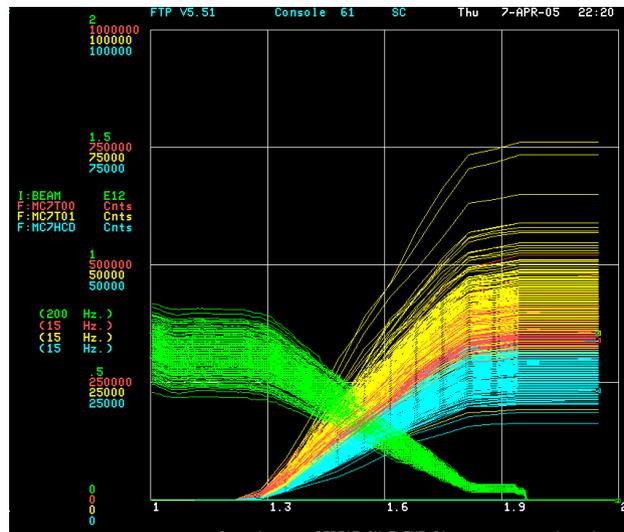


Bad beam, even if the profiles don't look so bad (-85 GeV/c)



MIPP beam status

- Example of large spill to spill variations, bad tune, and incomplete slow-extraction (+20GeV/c)



- Let us keep the beam quality up at what we have gotten used to in previous weeks!

MIPP summary

- We have been taking good physics data last week, despite some accelerator downtime, beam tune problems, and pressure curve data taking
 - First physics data at 20 GeV/c last week
- Beam quality is an issue
 - It starts at the MI
- NuMI/120GeV preparations are proceeding