Analysis Goals for FFS before QM'01:
Preliminary

Today is exactly one month before the *all–important* **QM '01**, and so it seems a good time to try to evaluate what must be done before we can consider the FFS data "ready" for presentation. This list is an attempt a producing such a list, but is certainly incomplete and requires input from the rest of the collaboration. So, dear collaborators, let us hear from you soon!

As you may notice, the plan is one toward a short–term goal, namely presentation at QM. We have therefore tried to establish a plan which allows us to stop the "mechanical" work (*i.e.* tuning parameters, sorting raw data, etc.) at (almost) any time and concentrate on the "final" analysis to produce identified particle spectra. I see this as the primary thrust of any FFS data on this time scale. We should be able to get π^-/π^+, (though with K contamination, unless we can use cerenkov data). We should also get $\bar{p}/p$. These two numbers, particularly presented together with the nice MRS data from the BNL group, are clearly of enough interest to support a parallel session talk at QM. In a bit more final condition, they could also bear publishing as a PRL or Physics Letter, at least in my humble opinion.

If the statistics allow for $\bar{p}/p$, they should also allow us to present this as a function of p_t. Even if we are only able to use data from the famous 4 degree setting, it should be possible to get up to 800-900MeV/c in p_t, though of course this depends on statistics. If there are useful runs for larger angles, it may be possible to go to higher p_t, but none of that data has been looked at yet, so this is rather speculative at present. We should also be able to look at the pion ratio as a function of p_t, down to $\approx$200 MeV/c with excellent statistics. A note about the pions: I realize full well that they will be contaminated by Kaons, but the pi/K ratio is large (presumably), and we can also try to either use information from cerenkov's or very tight (and low) mass cuts to try to minimize the contamination.

Now, if we can obtain reasonable acceptance corrections, we should be able to not only have ratios versus p_t, but also transverse momentum, or transverse mass spectra. This would be a very nice piece of physics: presenting the π and proton slopes at (more) forward rapidity. This last requires quite a bit of work, but may just be possible even in the short (and holiday riddled!) time available.

That is the short story of what we are working toward in Copenhagen here in *Juletiden*. The following is a list of specific items which need to be done to accomplish the larger physics goals set forth above.

1. Decide on minimal set of runs for 4 degree analysis.
   (a) Which runs have "good" statistics
   (b) Which runs have full complement of working detectors
   (c) Which mix of runs assures both A and B polarity at reasonable level of statistics
   (d) obtain prioritized list of runs to sort

2. Optimal Local tracking parameters for TPCs
    (a) Search widths for clustering
    (b) Search widths for local tracking
    (c) Other relevant parameters
3. Optimal Global tracking parameters for FFS
    (a) correct drift velocities
    (b) correct relative positions
    (c) matching angle
    (d) matching slopes
    (e) matching $\Delta X, \Delta Y$
4. PID optimization
    (a) Can we use C1?
    (b) Can we use H2?
    (c) Can we use RICH?
5. Estimate Tracking and PID efficiency
    (a) T1 efficiency
    (b) T2 efficiency (particularly *vs.* Yposition)
    (c) H1 efficiency: geometric (loss between slats?)
    (d) H1 efficiency: functional (all hits registered?)
    (e) H1 efficiency: multiplicity (too many hits?)
    (f) Other relevant efficiencies?
6. Calibrations
    (a) systematic calibrations for all used runs
    (b) determine overall timing resolution
    (c) determine mass resolution (depends on both t and p!)
    (d) better BB calibrations (perhaps unrealistic in available time?)
    (e) others?
7. Monte Carlo for acceptance
    (a) full gbrahms, or toy (geometrical) simulation?
    (b) which input (event generator, or functional?)
    (c) forgotten items?
8. Model calculations for comparison

(a) Cassing's event generator
(b) Hijing
(c) Nexus?
(d) Others?

9. Rough draft of physics plots
   (a) pid spectra
   (b) pt spectra
   (c) when?
10. Multiplicity
    (a) centrality cuts

That is all I can think of late Friday afternoon. I welcome any and all input from the rest of you!