Final (hopefully) $dN/d\eta$ from TPM1 at 90^o, 60^o and 40^o

Bjørn H. Samset

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This is a *very* brief note, intended to present my latest and hopefully final $dN/d\eta$ numbers from TPM1. All the details about the analysis will be presented in my thesis, which will probably be presented on friday (May 11. 2001).

The analysis has been done for three spectrometer angles, 90^o, 60^o and 40^o, corresponding to pseudorapidities of 0, 0.55 and 1.1 respectively. It includes corrections for

- Geometric acceptance.
- Background.
- Ghosts.
- Tracking efficiency.

I have used the crash–free TrackFollowFinder presented by Peter C. a while back, and the centralities are from the very latest classes made by S. Sanders. (BRAT-1-15-7)

Systematic errors are also estimated, and include contributions from

- Tracking parameters.
- Tracking efficiency.
- Background subtraction.
- Ghost correction.
- Number of participants.

The results are shown in tables 1 and 2, while the number of participants I have used are given in table 3. I have not plotted my numbers relative to the globals since I understand new numbers are soon coming, but I have plotted some them relative to each other in figures 1, 2 and 3.

	$dN/d\eta$ per unit of η		
Centrality (%)	90^o	60^o	40^o
0–5	$552\pm4^{+50}_{-39}$	$554\pm6^{+50}_{-39}$	$585\pm4^{+53}_{-41}$
5–10	$437\pm3^{+35}_{-30}$	$450\pm5^{+36}_{-31}$	$479\pm3^{+38}_{-34}$
10–20	$315\pm2^{+25}_{-22}$	$320\pm3^{+26}_{-22}$	$350\pm2^{+28}_{-24}$
20–30	$200\pm2^{+14}_{-12}$	$198\pm3^{+14}_{-12}$	$225\pm2^{+16}_{-13}$
30–40	$120\pm1^{+8}_{-7}$	$126\pm2^{+9}_{-8}$	$141\pm2^{+10}_{-8}$
40–50	$73\pm1^{+4}_{-4}$	$73\pm2^{+4}_{-4}$	$86\pm1^{+5}_{-5}$

Table 1: Charged particle production ($dN/d\eta$) normalized to one unit of pseudorapidity, including statsitical and systematic errors.

A few comments about the numbers: I guess you will quickly notice the jumpiness of the 60^o numbers. The reason is lousy statistics - I only have run 2523 analyzed. I know run 2524 is also 60^o, but since it is only four sequences I gave up on it after failing to get it from HPSS (HPSS problem). Still, within the errors it is not too bad. Wiser heads than mine will have to decide what to do with this measurement.

Also, the curves in fig. 3 drop pretty low realtive to the *pp* point, but with the systematic uncertainties I have this does not bother me too much. This also goes for the fact that the numbers are somewhat high relative to the globals. I won't speculate on this since the final numbers are not yet out.

Another thing I might add is that I have tested my analysis on a HIJING simulation of ~ 3000 events with $b < 2$. My result was 595 while HIJING predicts 601, so I'm quite confident that the analysis it at least not very far off.

So — those are the numbers, including all corrections that we plan to make. If you have any comments please shout, especially if e.g. the N_{Part} numbers I have used are no longer the latest ones (they are from BAN26). Again, all details about this analysis will be presented at the end of the week.

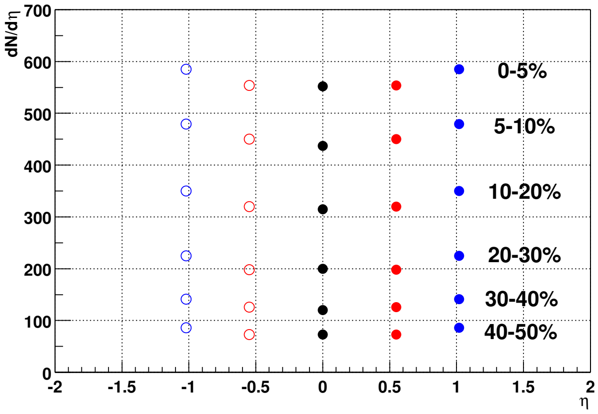

Figure 1: $dN/d\eta$ versus η from TPM1. The empty points are reflected about $\eta = 0$.

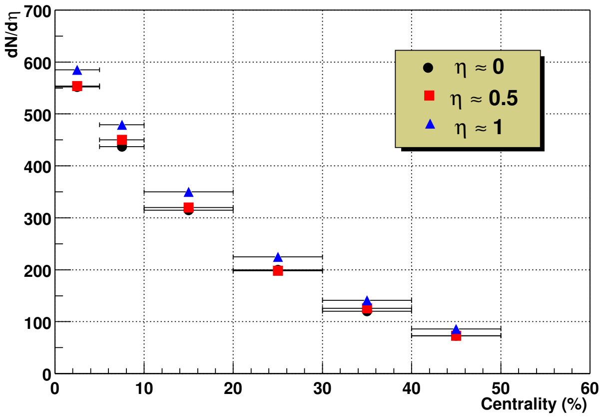

Figure 2: $dN/d\eta$ versus centrality from TPM1.

	$\frac{dN}{d\eta}/0.5 \cdot N_{Part}$ per unit of η		
Centrality (%)	90^o	60^o	40^o
0–5	$3.26{\pm}0.02^{+0.33}_{-0.23}$	$3.28{\pm}0.04^{+0.33}_{-0.23}$	$3.46{\pm}0.02^{+0.35}_{-0.24}$
5–10	$3.03{\pm}0.02^{+0.30}_{-0.21}$	$3.11{\pm}0.04^{+0.31}_{-0.22}$	$3.32{\pm}0.02^{+0.33}_{-0.23}$
10–20	$2.87{\pm}0.02^{+0.29}_{-0.20}$	$2.91{\pm}0.03^{+0.29}_{-0.20}$	$3.18{\pm}0.02^{+0.32}_{-0.22}$
20–30	$2.60{\pm}0.02^{+0.23}_{-0.16}$	$2.56{\pm}0.03^{+0.23}_{-0.15}$	$2.92{\pm}0.02^{+0.26}_{-0.18}$
30–40	$2.33{\pm}0.03^{+0.28}_{-0.14}$	$2.44{\pm}0.04^{+0.29}_{-0.15}$	$2.75{\pm}0.03^{+0.33}_{-0.16}$
40–50	$2.22{\pm}0.04^{+0.27}_{-0.18}$	$2.20{\pm}0.05^{+0.26}_{-0.18}$	$2.61{\pm}0.04^{+0.31}_{-0.21}$

Table 2: Charged particle production ($dN/d\eta$) per number of participant pairs, normalized to one unit of pseudorapidity. Includes statsitical and systematic errors.

Centrality (%)	$< N_{Part} >$
0–5	338
5–10	289
10–20	220
20–30	154
30–40	103
40–50	66

Table 3: The avereage number of participating nucleons in each centrality class. Numbers from BAN26.

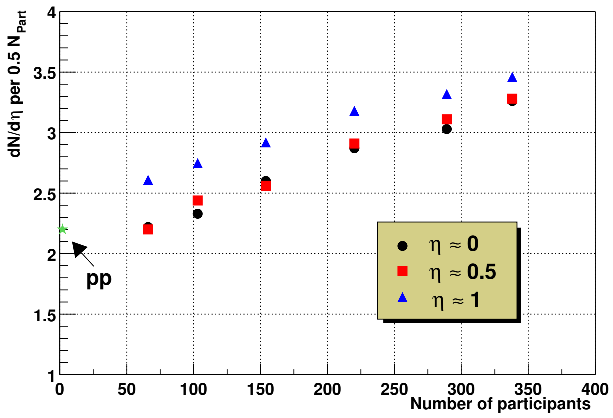

Figure 3: $dN/d\eta$ per $0.5 \cdot N_{Part}$ from TPM1.