

Minutes 20/12 2018 by Peter

Christian presented a nice overview of results from MPI.

- On slide 2 he advertised a list of nice talks he did not summarize.
- Slide 3-7 focused on the scaling of soft and hard physics in pp vs mult. It is understood that this relation is non-linear for the same reason that $\langle p_T \rangle$ grows with mult. However, it is not clear if it is the same for all hard probes or different for some probes.
 - One has to be very careful in understanding where mult is estimated in experimental measurements. If the mult is measured in the same region as the hard probe (e.g. slide 3) then there will be a trivial bias, which could be different for different probes.
 - It was interesting to see that in PYTHIA (slide 5) there seemed to be a genuine hard effect from cluster collapse: i.e. one has two cbar pairs from two different scatterings in the event and one “mixed” cbar pair colour recombines into a J/Ψ .
 - Comment from Peter: if one wants experiments to follow up on this then it seems smart to request data that can be easily compared: forward estimator for mult slicing and mid-rapidity results for mult and hard. As always, a smart theory paper that points this out makes it easier to convince a collaboration :-)
- Slide 8-10: is flow sensitive to hot spots in small systems? Small effect on slide 10, but other observables might be better.
- Slide 11-14: interpretation of cosmic showers relies on phenomenological QCD models. Very big difference between models. Angantyr can contribute.
- Slide 15: flow in ee? Unclear how to do this the best way. Statistics is also likely challenging.

Peter presented his wishes, which were more directed towards understanding what goes on in PYTHIA and Angantyr.

Comment:

- Slide 2:
 - There was a comment from Gösta that entropy is likely first generated when the strings stretch and so if CR happens early then there is no issue
- Slide 4:
 - There was a comment from Torbjörn that when he studied $e+e^- \rightarrow W+W^- \rightarrow 2*q-qbar$ he looked at how the two strings could CR and it was more like a chain, i.e., the CR effects are local and does not give long range effects.
- Slide 5:
 - There was a comment from Christian to look at the paper: <https://inspirehep.net/record/1377392>