Can we better measure impact parameter in p+A collisions ?

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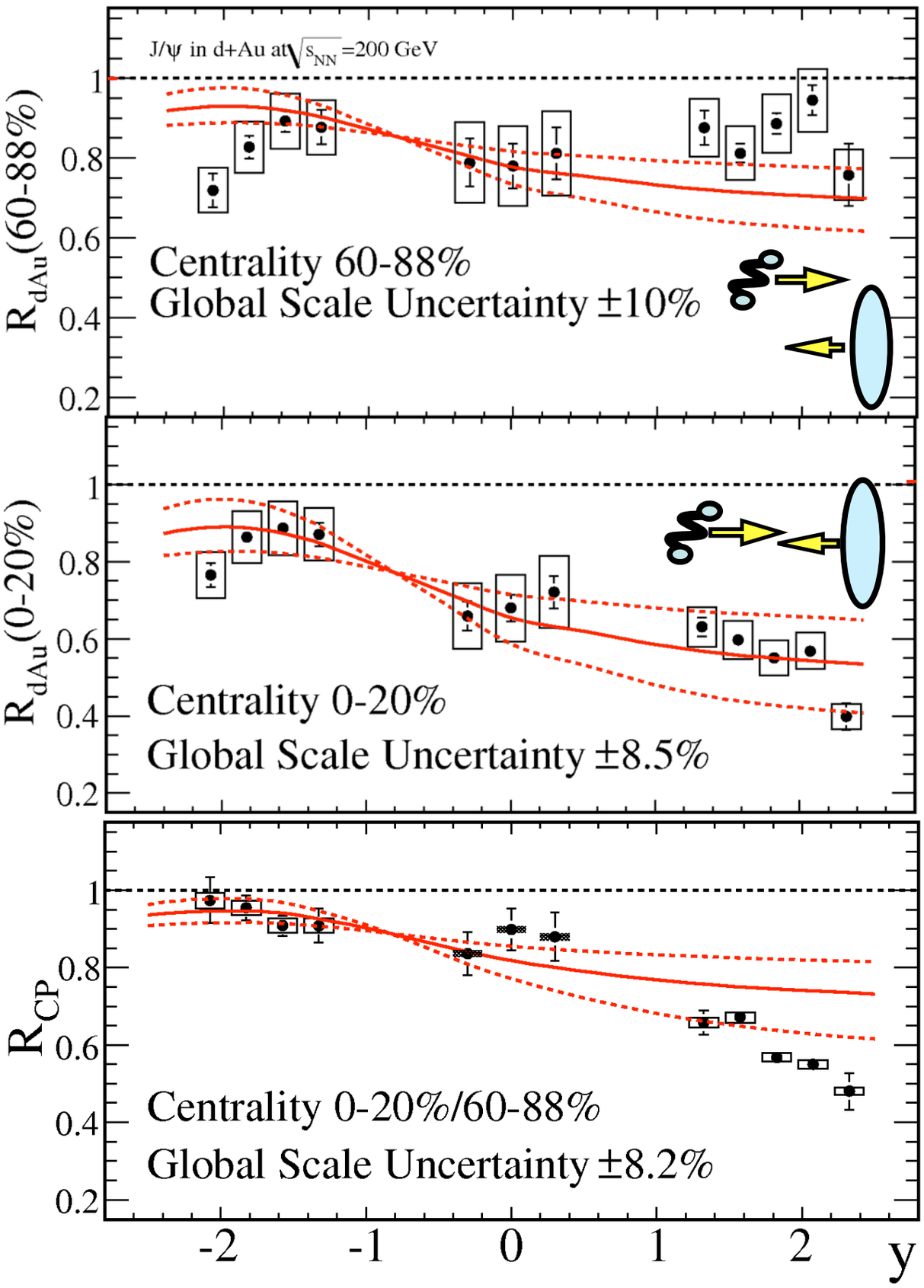
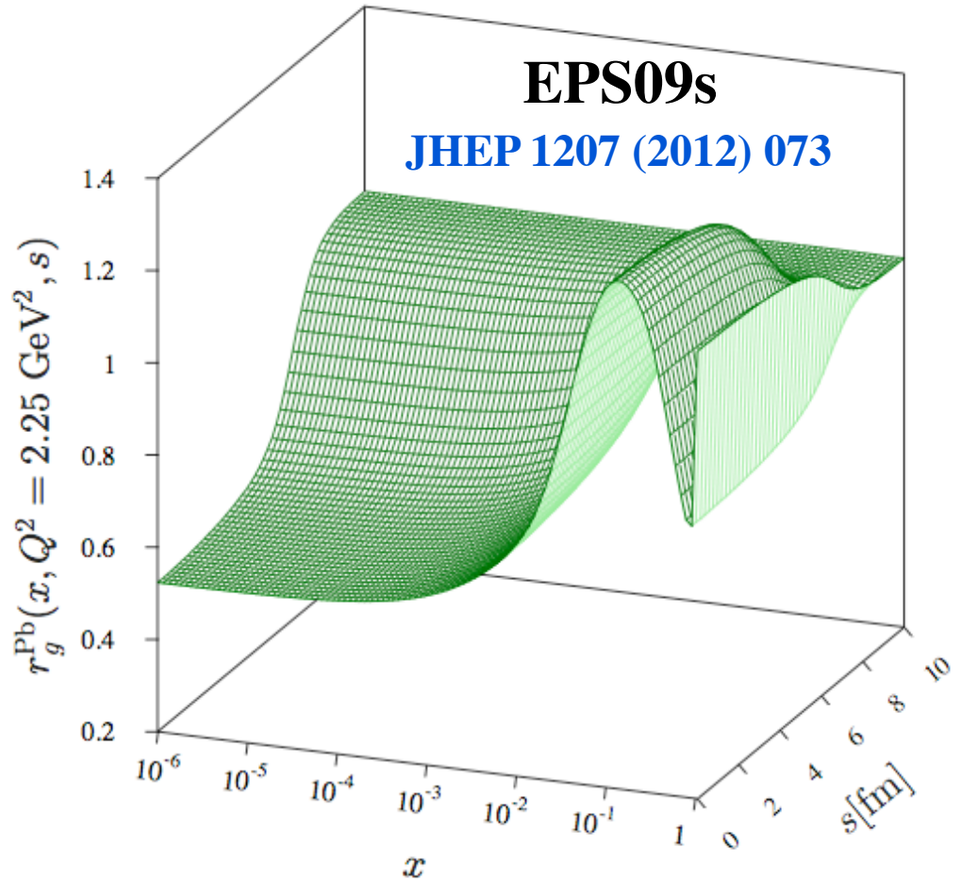
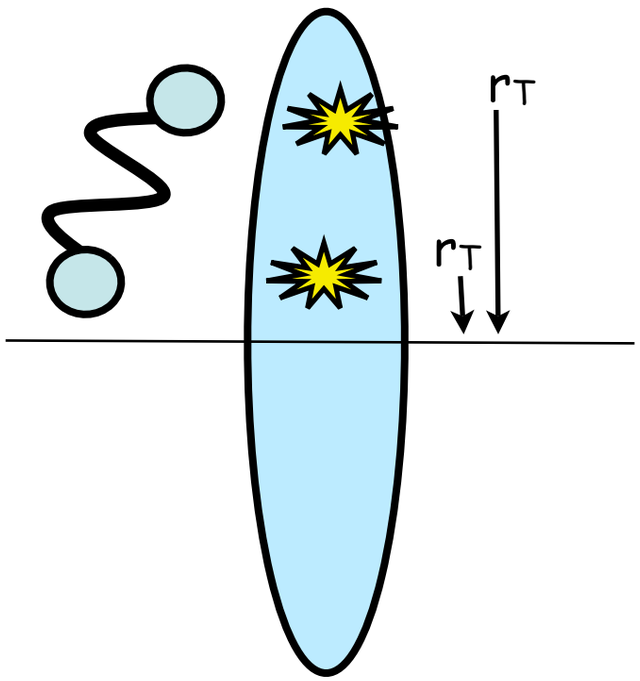
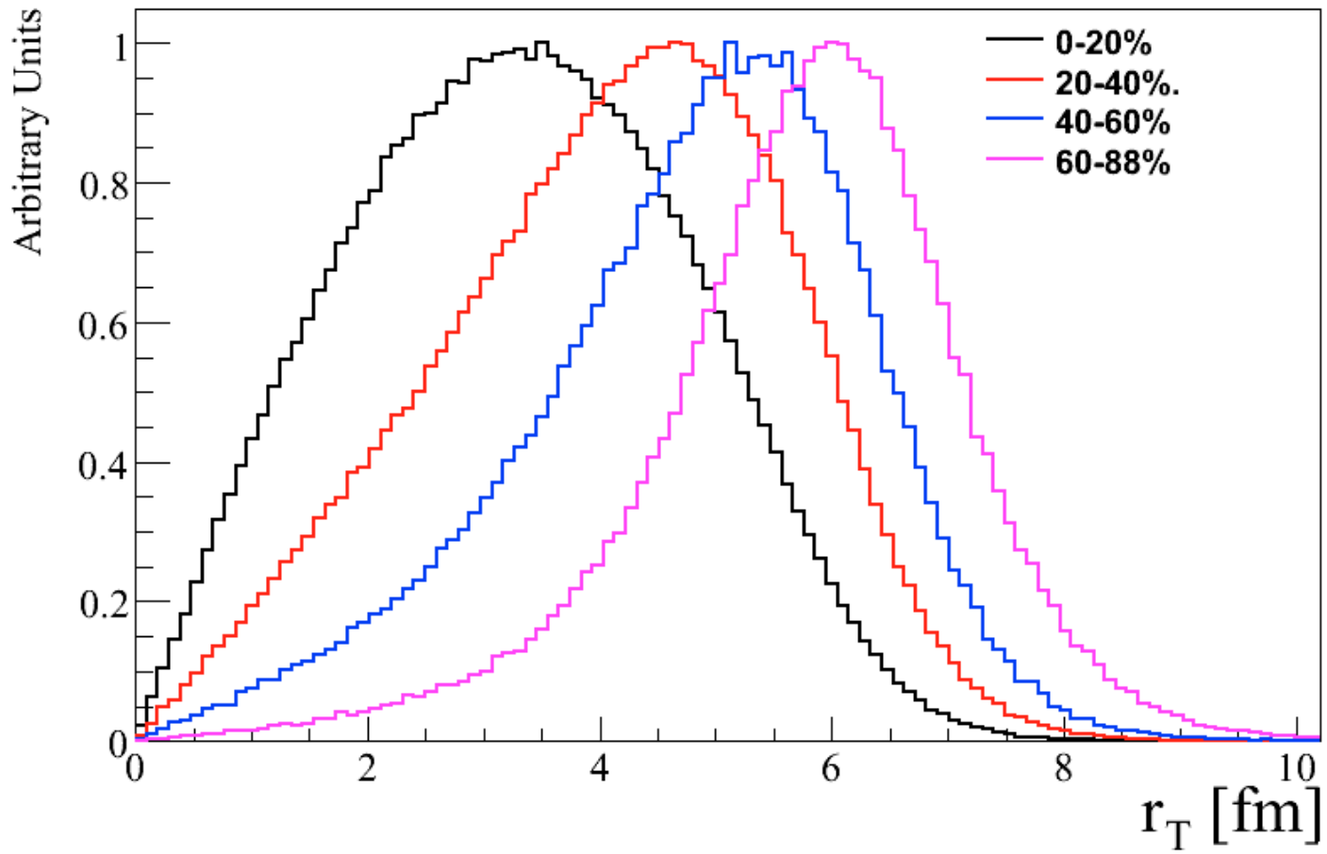


- EPS09 cannot reproduce either RdA in peripheral events or Rcp
- one of the first indications of an impact parameter dependence of the nPDF



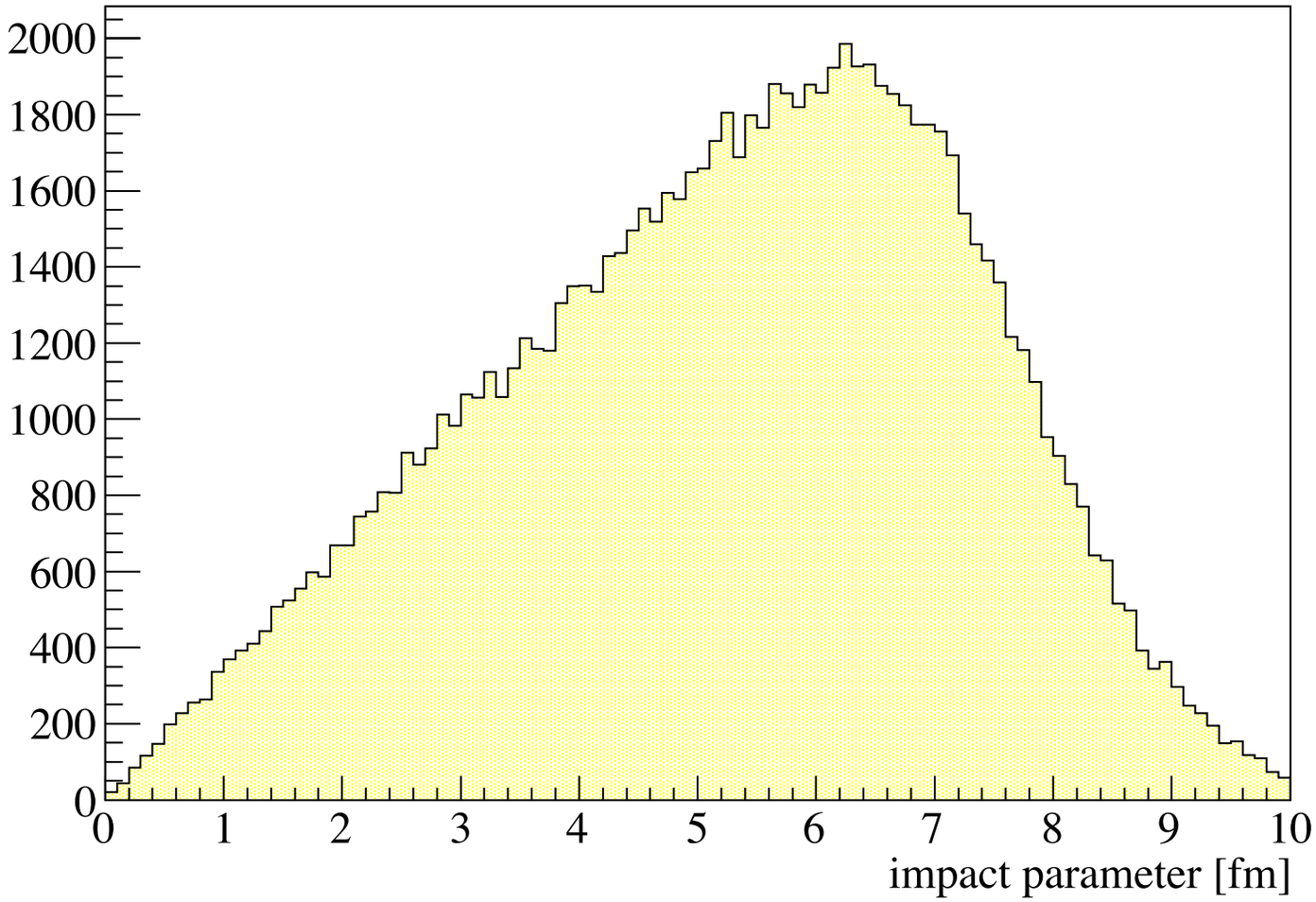


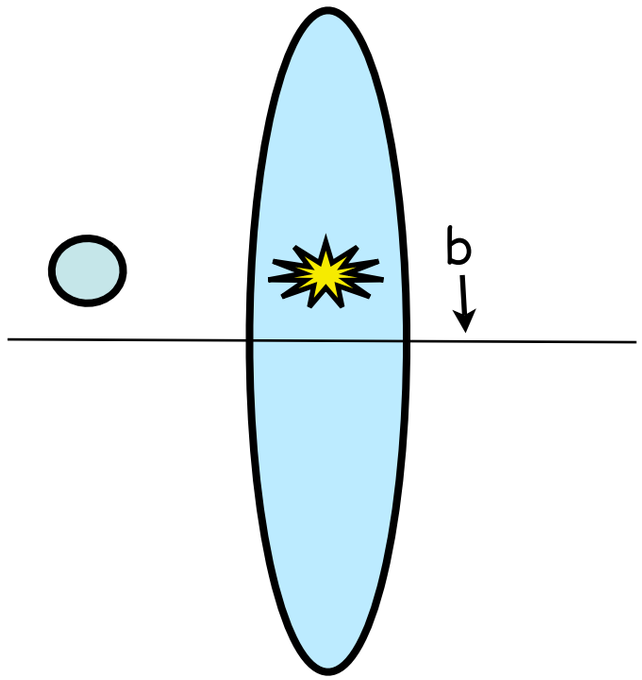


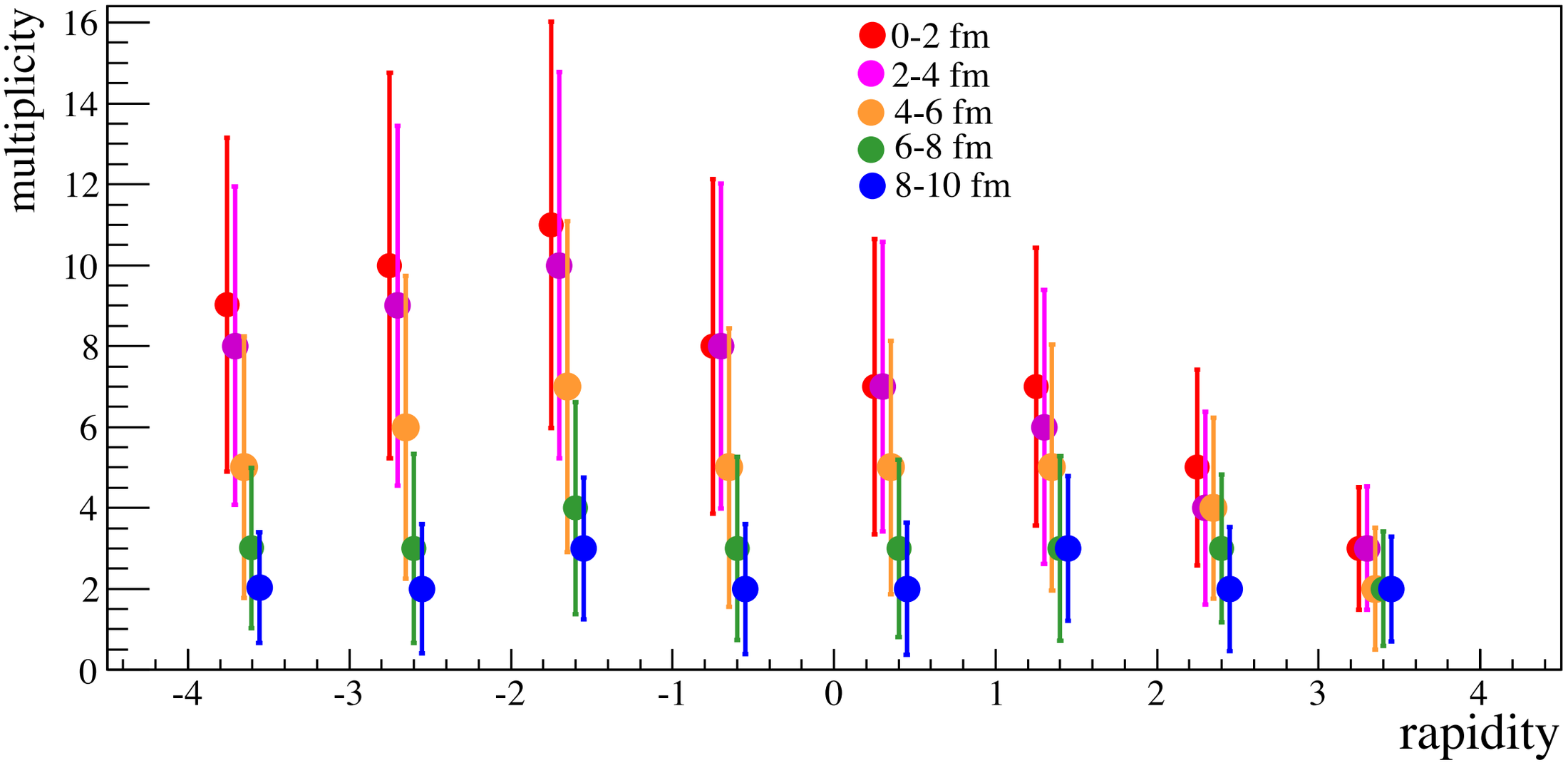
The impact parameter is still poorly determined in d+Au collisions

Future p+A collisions and additional centrality detectors should provide a better measurement of the impact parameter and how nPDFs can be extrapolated to A+A collisions

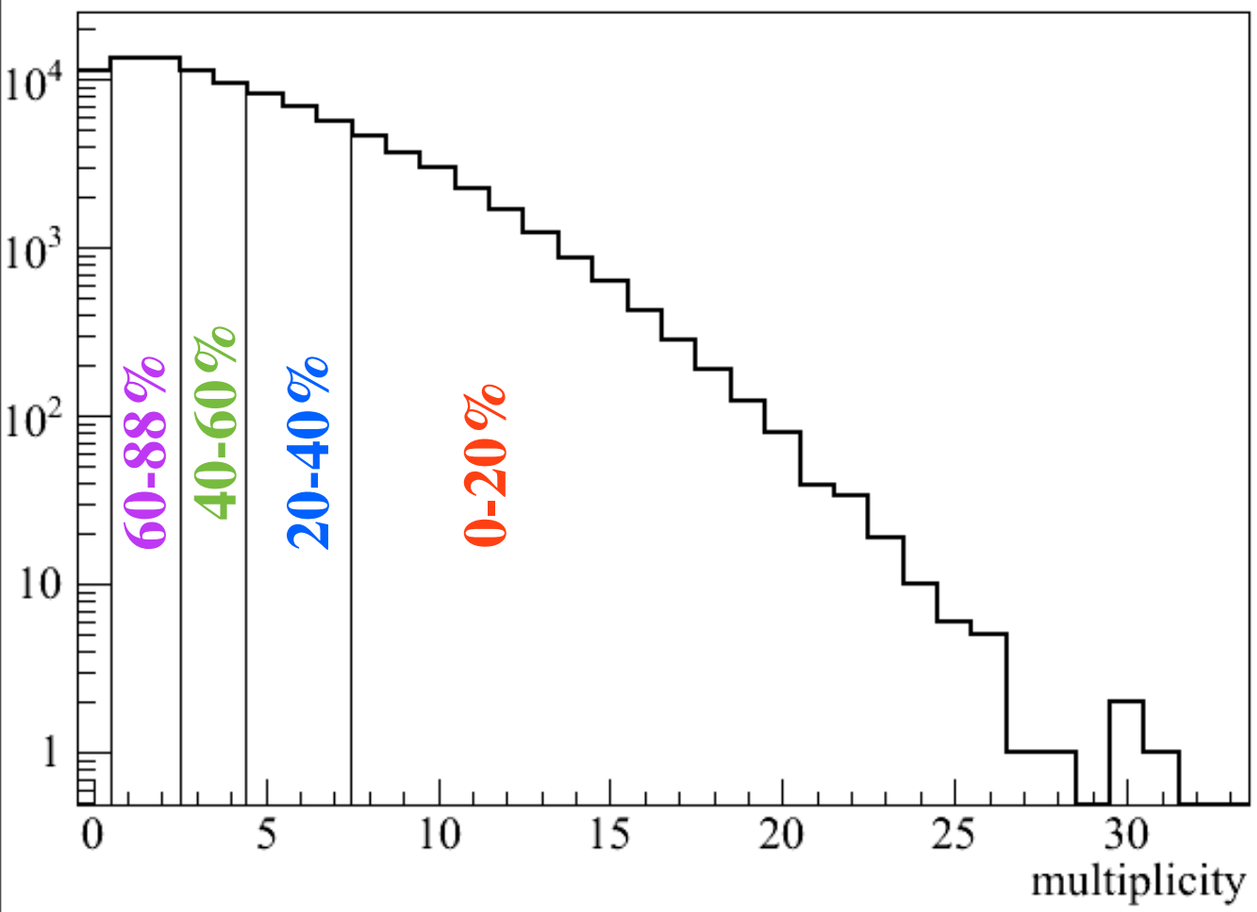
- using 100K p+Au HIJING events
- study particle multiplicity in MPC and FVTX regions as a function of impact parameter

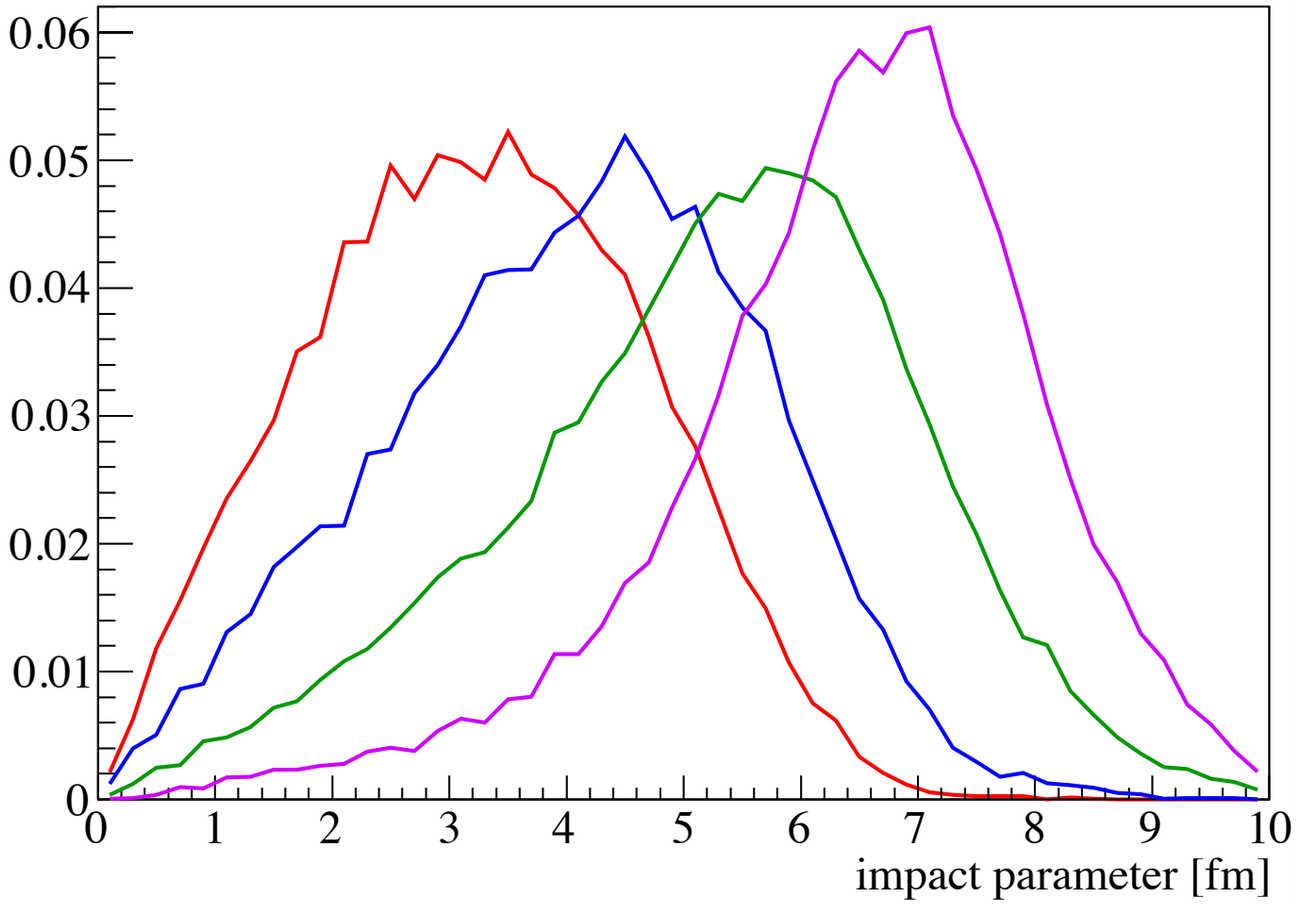




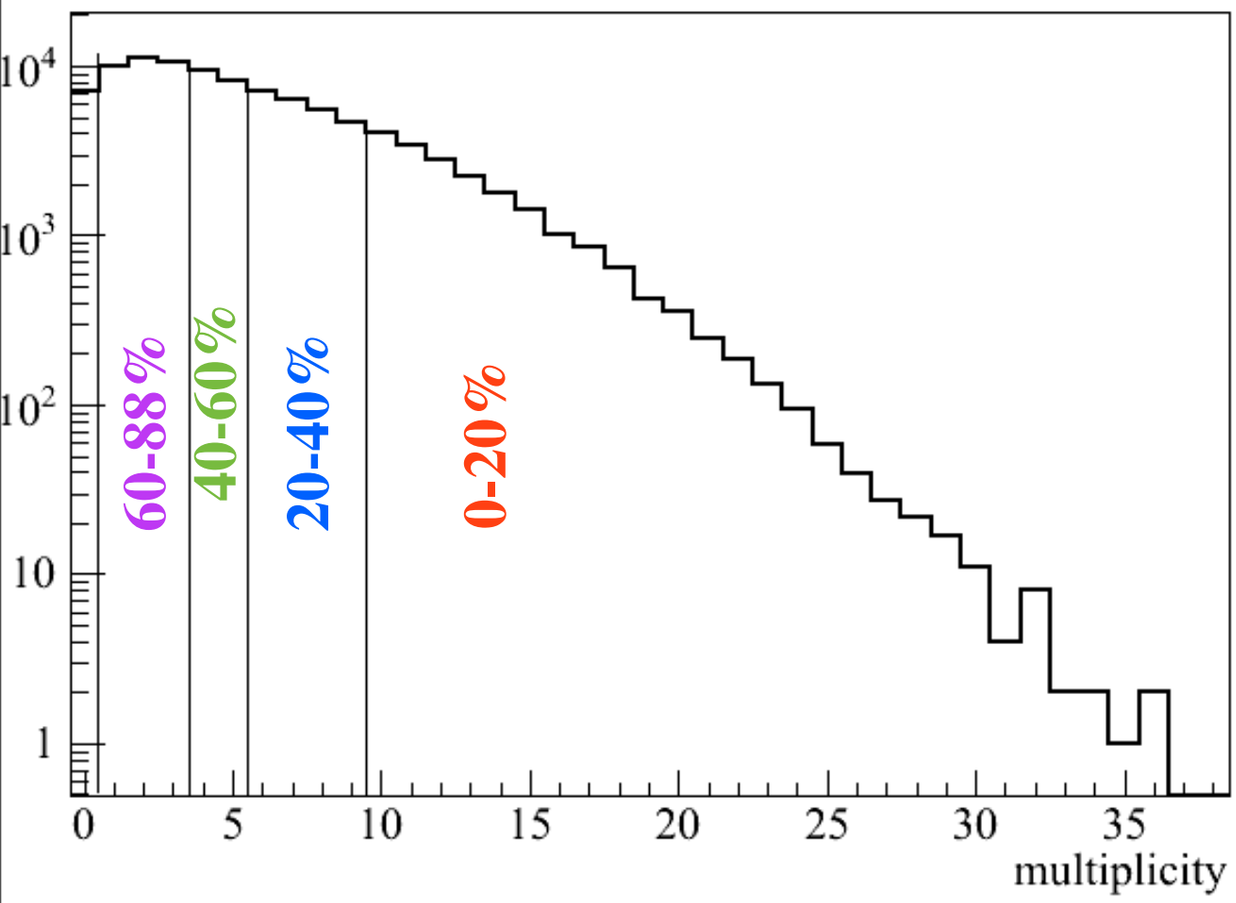

multiplicity
16
14
12
10
8
6
4
2
0
-4
-3
-2
-1
0
1
2
3
4
rapidity
0-2 fm
2-4 fm
4-6 fm
6-8 fm
8-10 fm

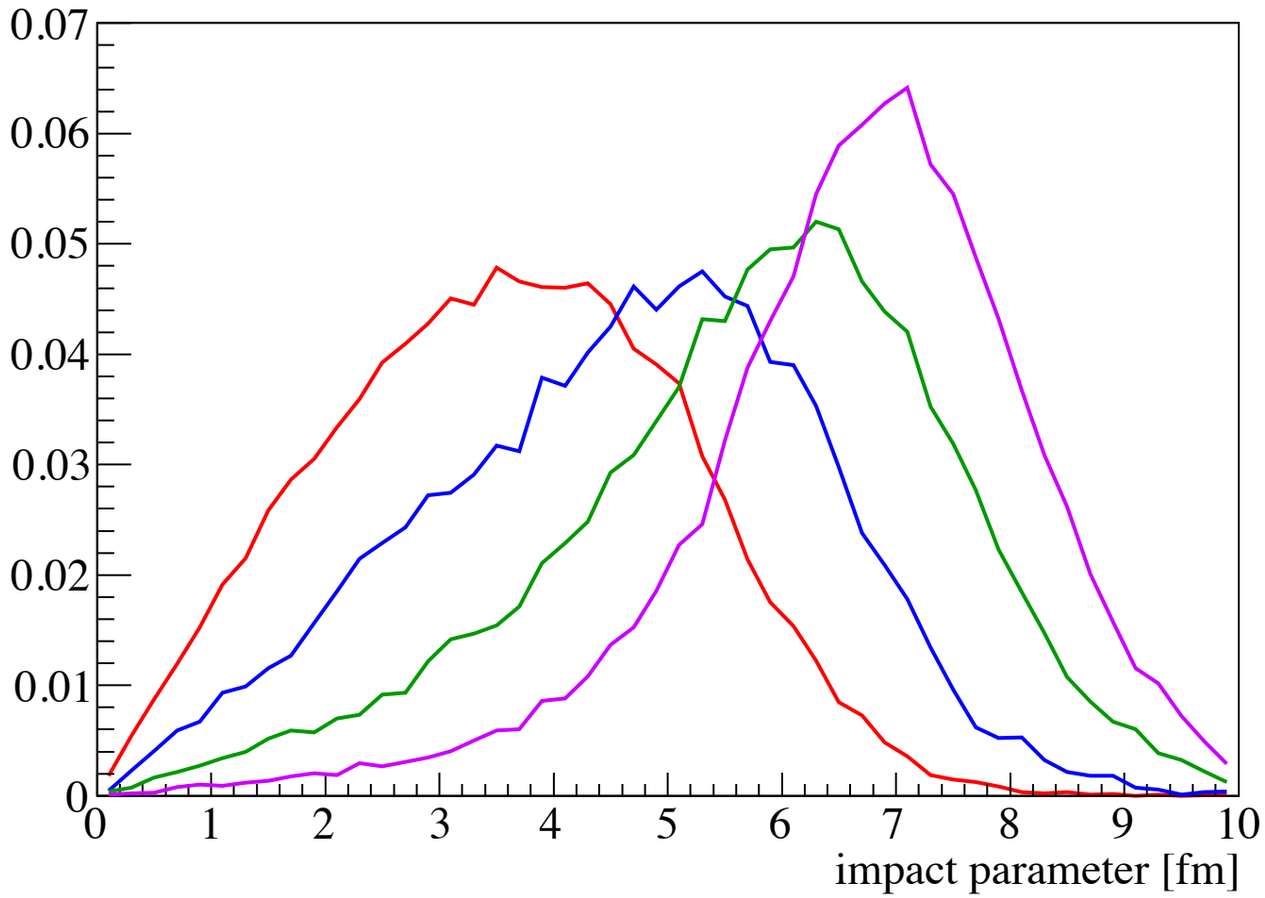
Multiplicity in 3<η<4 region



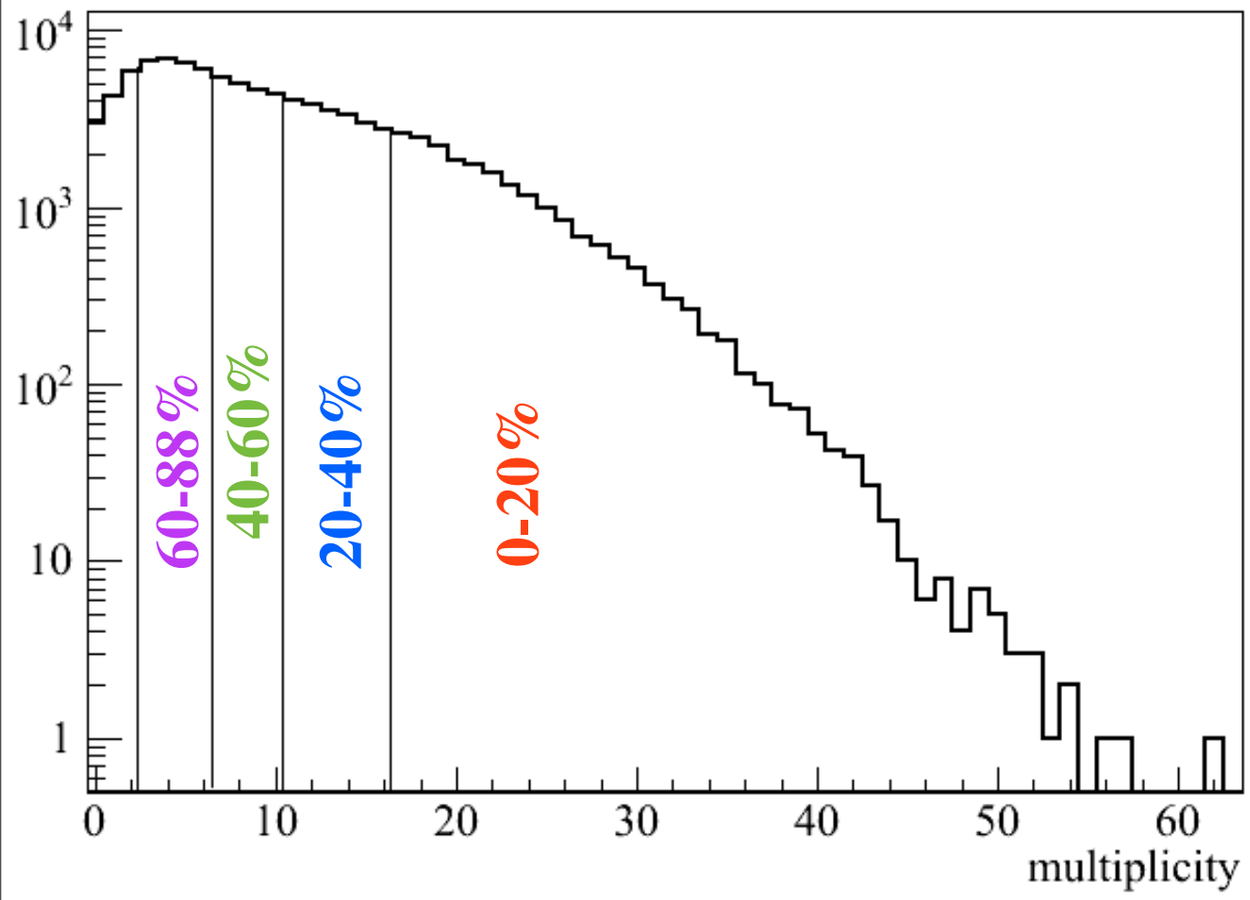


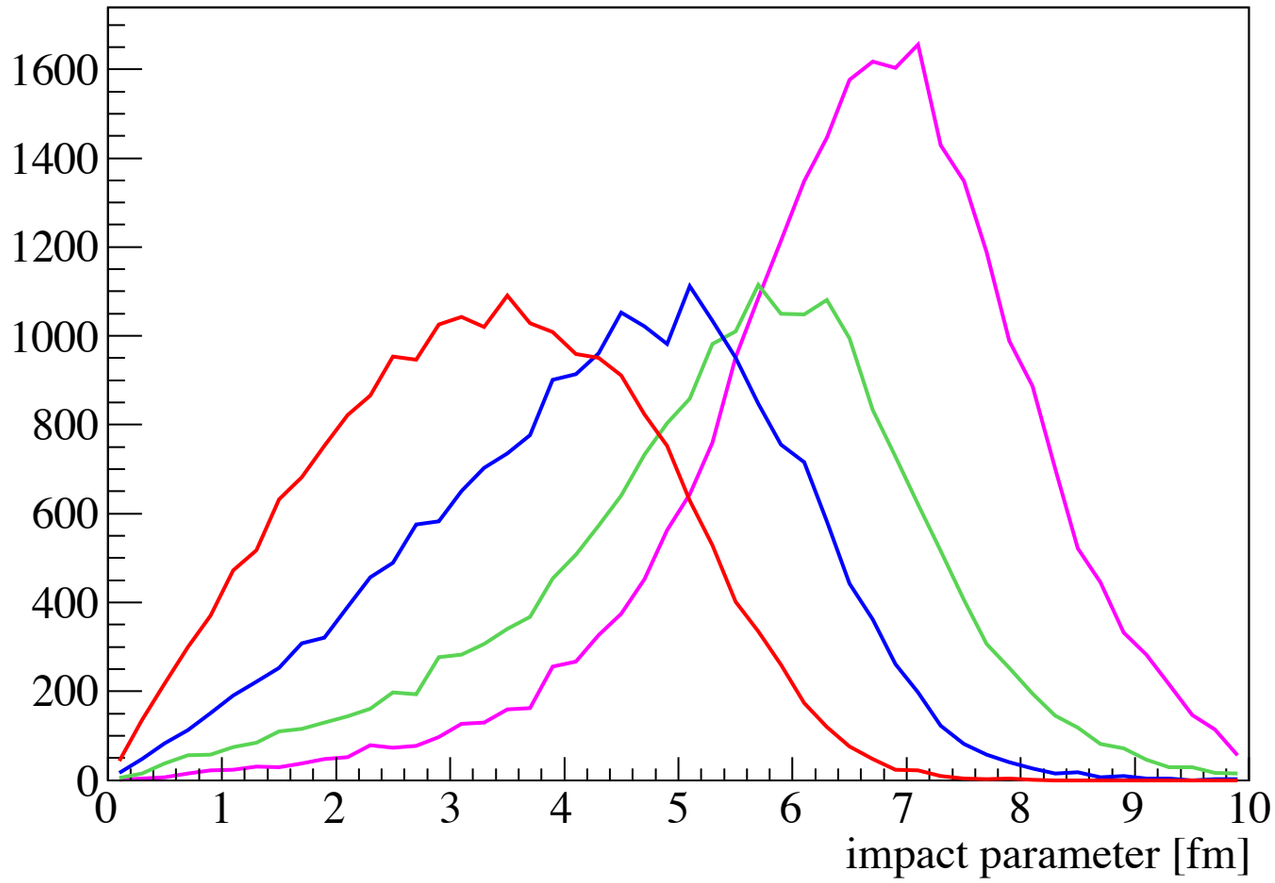
Multiplicity in $1<\eta<2$ region





Multiplicity in 1<η<2 + 3<η<4 regions





Conclusions

- negative rapidity is more sensitive for impact parameter measurement

- the determination of the impact parameter in more details is limited by the fluctuation of the particle multiplicity in p+A collisions

- d+A collisions double the multiplicity but it is a big object and introduce another uncertainties in determine b