Negative asymmetry for Λb/antiΛb (the LHC_b data) and diquark fragmentation in QGSM

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Outlook

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II. What the previous measurements tell us?

III. How the heavy quark Lambdas are different from light quark baryons?

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VIII. What in the Universe can be influenced by string junction parameter?

IX. Conclusions

I. How the asymmetry, measured in LHC_b can be reflected into the central rapidity region?

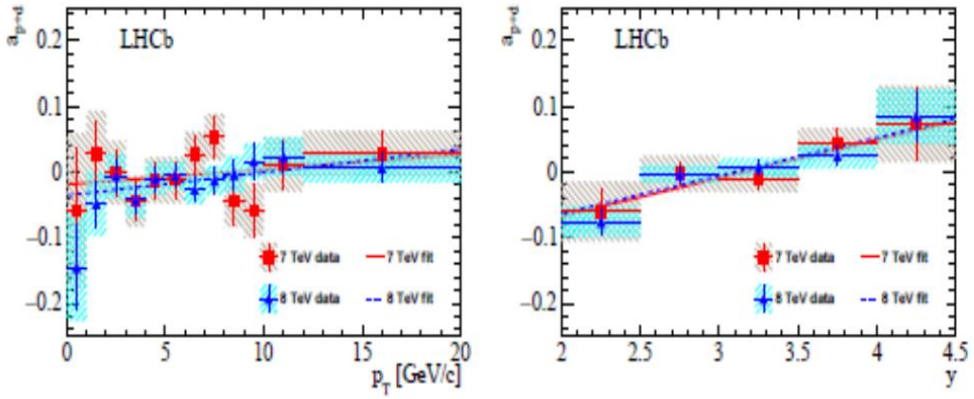
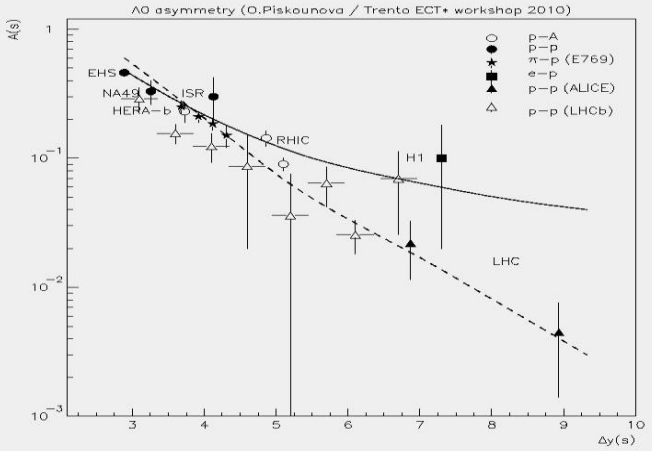


Figure 7: Asymmetries a_{p+d} between Λ_b^0 and $\overline{\Lambda}_b^0$ as functions of (left) p_T and (right) y. The error bars indicate statistical uncertainties, and the hatched areas the total uncertainties.



At high energy the spectra at y=2-4 are on the same "table" as the center. It is seen for Λ^0 that at 7TeV the asymmetry can be taken as central.

No similarity is expected for heavy b-quark baryon at 7 TeV. Data points are still in the region of diquark fragmentation.

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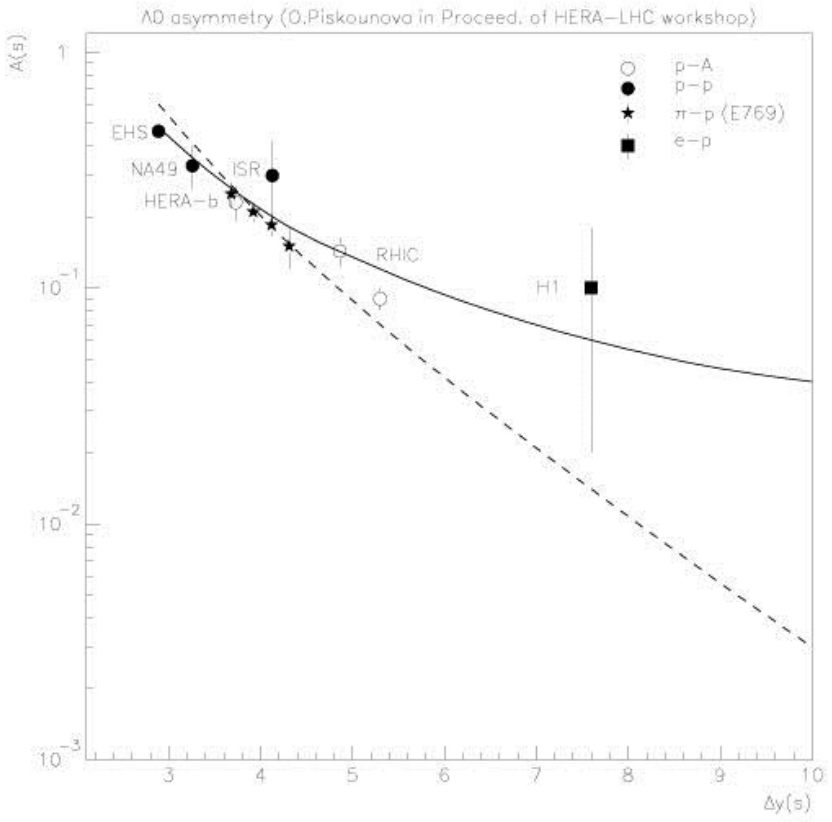
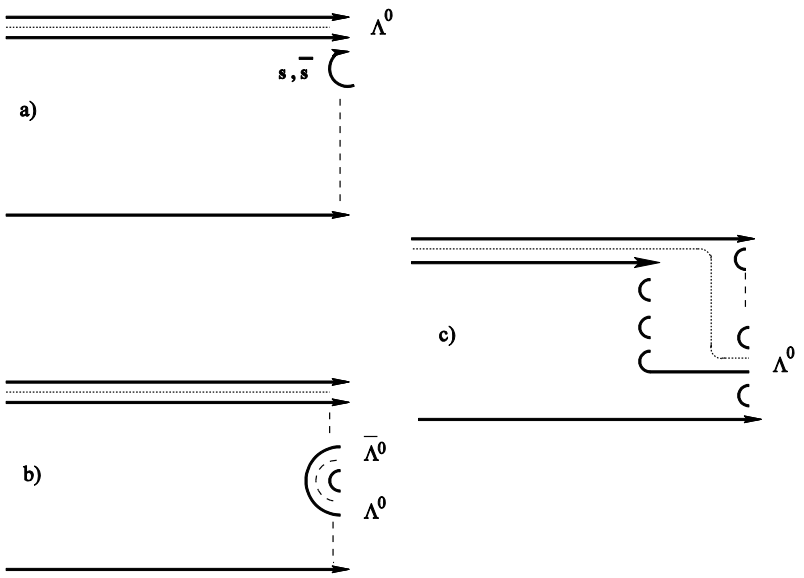
What the previous measurements tell us?



The intercept of string junction Regge trajectory, $\alpha_{SJ}(0)$ can be varied from 0.999 to 0.5

High value of intercept gives a valuable asymmetry at LHC



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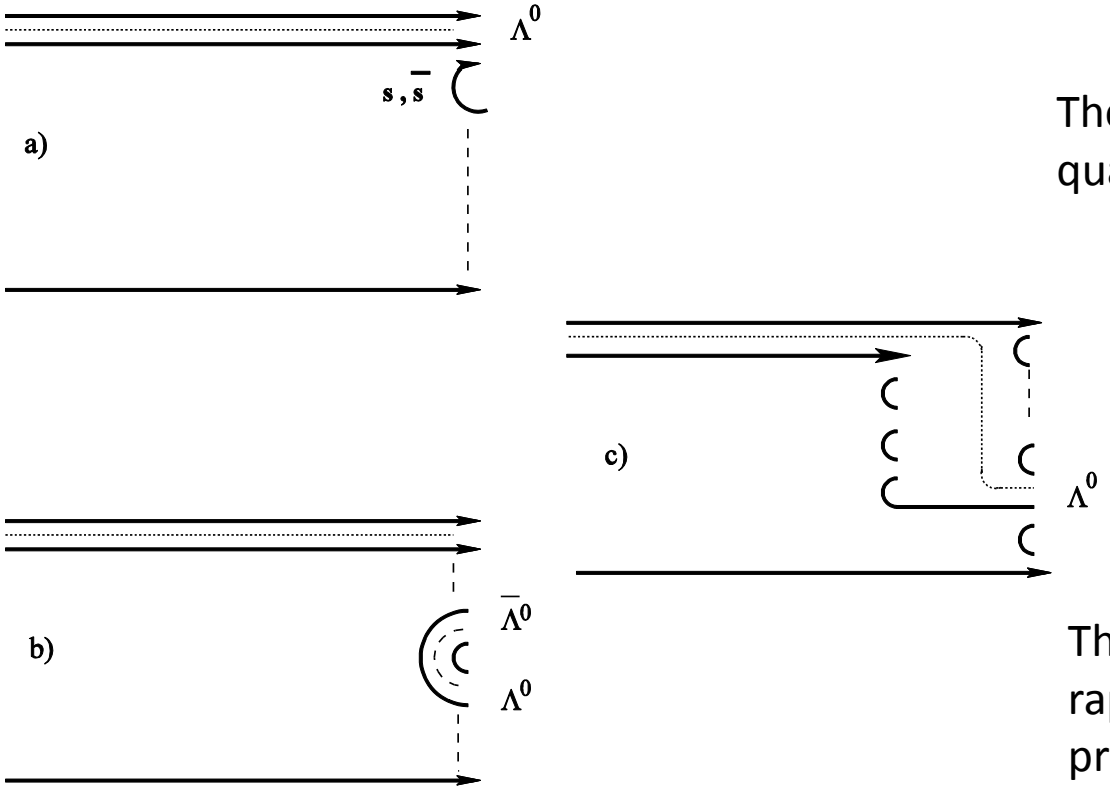
How the heavy quark Λ's are different from light quark baryons?



The intercepts for heavy quark trajectories differ from $\alpha_\varphi(0)$.

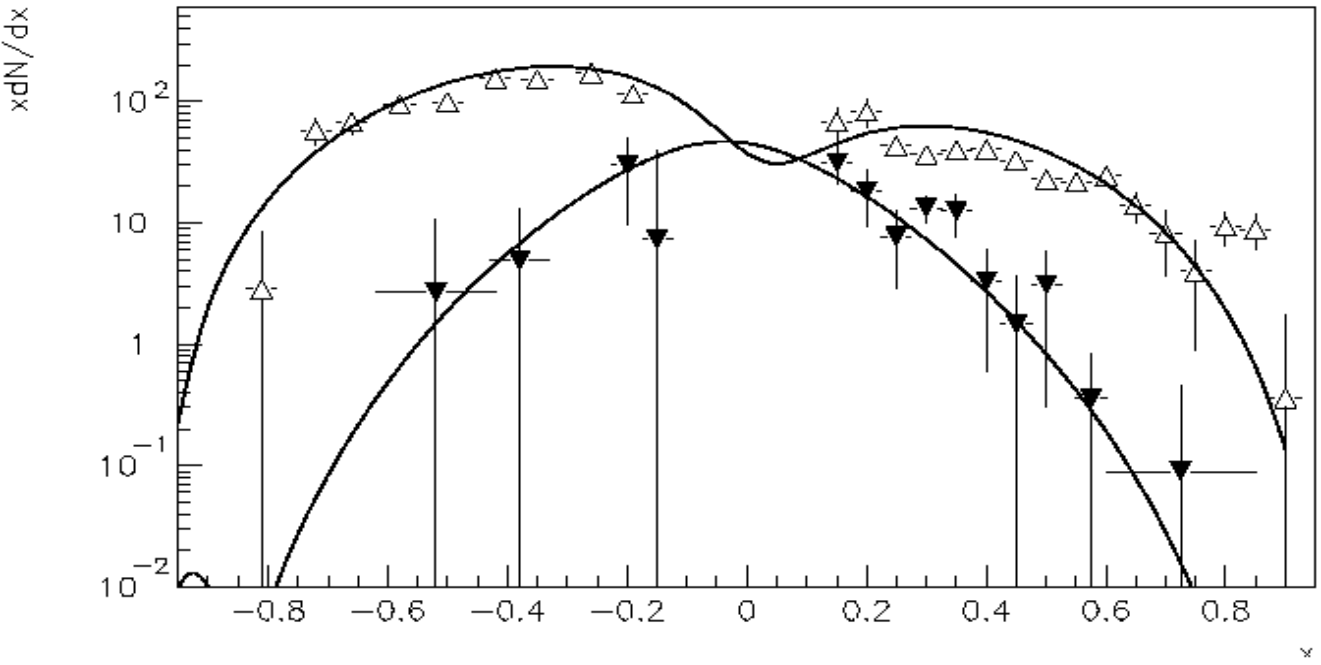
The values of $\alpha_\psi(0)$=-2 and $\alpha_\Upsilon(0)$=-5 influence on the form of spectra.

The baryons in the central rapidity region went from proton diquark fragmentation, where antibaryons have to be produced easier.

Such a way the baryon/antibaryon asymmetry can be negative in the region of diquark fragmentation.

What the QGSM has predicted for the spectra of Λ_c?

Leading effects in the spectra of Lambda(c) and anti-Lambda(c) produced in Sigma- p, pp and pi- p interactions , Olga I. Piskounova, Phys.Atom.Nucl. 66 (2003) 307-312
e-Print: hep-ph/0202005



WA89: Λc spectra in pp and Σp

Asymmetry can be negative at small energy and in the local rapidity region

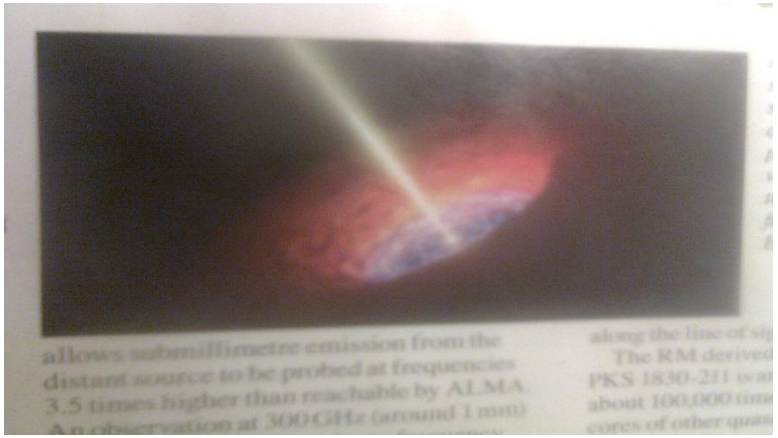
We have to measure asymmetry at exactly central rapidity!

What about the contribution from String Junction?

The string junction contribution have to be seen in central rapidity region and it is responsible for baryon asymmetry in hadroproduction at LHC energies.

What in the Universe can be influenced by string junction parameter?

Baryons/antibaryons that have been produced at the cosmic ray sources are to bring baryon asymmetry in the broad region of their spectra.



Conclusions

Diquark fragmentation is still working at y=2. in LHCb heavy baryon production. It causes local negative asymmetry between heavy baryons and antibaryons. This effect makes the measurements of SJ contribution rather complicated.

The string junction brings positive asymmetry into central rapidity region and has to be responsible for baryon asymmetry in central part of spectra in baryon/antibaryon hadroproduction in space laboratory system.

More measurements are needed for heavy quark baryon asymmetry at the central rapidity.