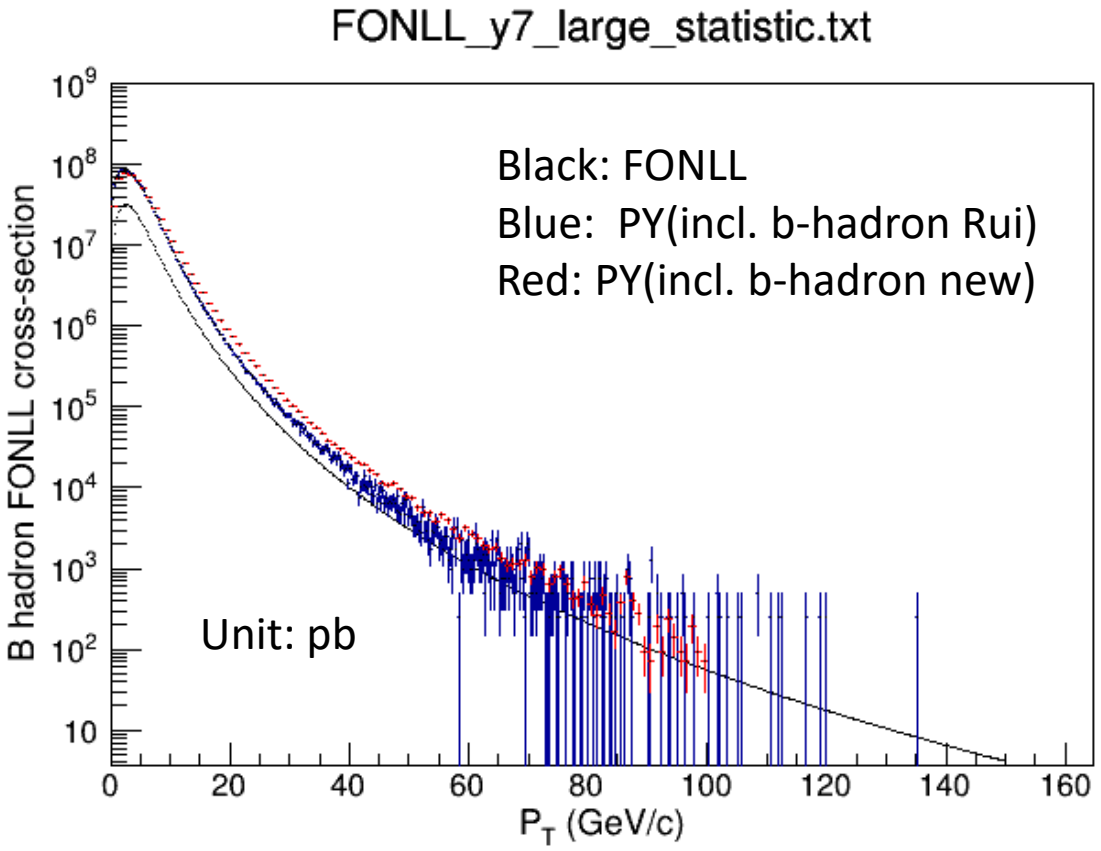
```
 pythia.readString("SoftQCD:nonDiffractive = on");
// Color reconnection tune (CR) mode2
  pythia.readString("Tune:pp 14");
  pythia.readString("Tune:ee 7");
  pythia.readString("MultipartonInteractions:ecmPow=0.215");
  pythia.readString("MultipartonInteractions:expPow=1.85");
  pythia.readString("StringPT:sigma =0.335");
  pythia.readString("StringZ:aLund =0.36");
  pythia.readString("StringZ:bLund =0.56");
  pythia.readString("StringFlav:probQQtoQ =0.078");
  pythia.readString("StringFlav:ProbStoUD =0.2");
  pythia.readString("StringFlav:probQQ1toQQ0join =
0.0275,0.0275,0.0275,0.0275");
  pythia.readString("MultiPartonInteractions:pT0Ref =2.15");
  pythia.readString("BeamRemnants:remnantMode =1");
  pythia.readString("BeamRemnants:saturation= 5");
  pythia.readString("ColourReconnection:mode = 1");
  pythia.readString("ColourReconnection:allowDoubleJunRem =off");
  pythia.readString("ColourReconnection:m0=0.3");
  pythia.readString("ColourReconnection:allowJunctions =on");
  pythia.readString("ColourReconnection:junctionCorrection=1.2");
  pythia.readString("ColourReconnection:timeDilationMode=2");
  pythia.readString("ColourReconnection:timeDilationPar=0.18");
```

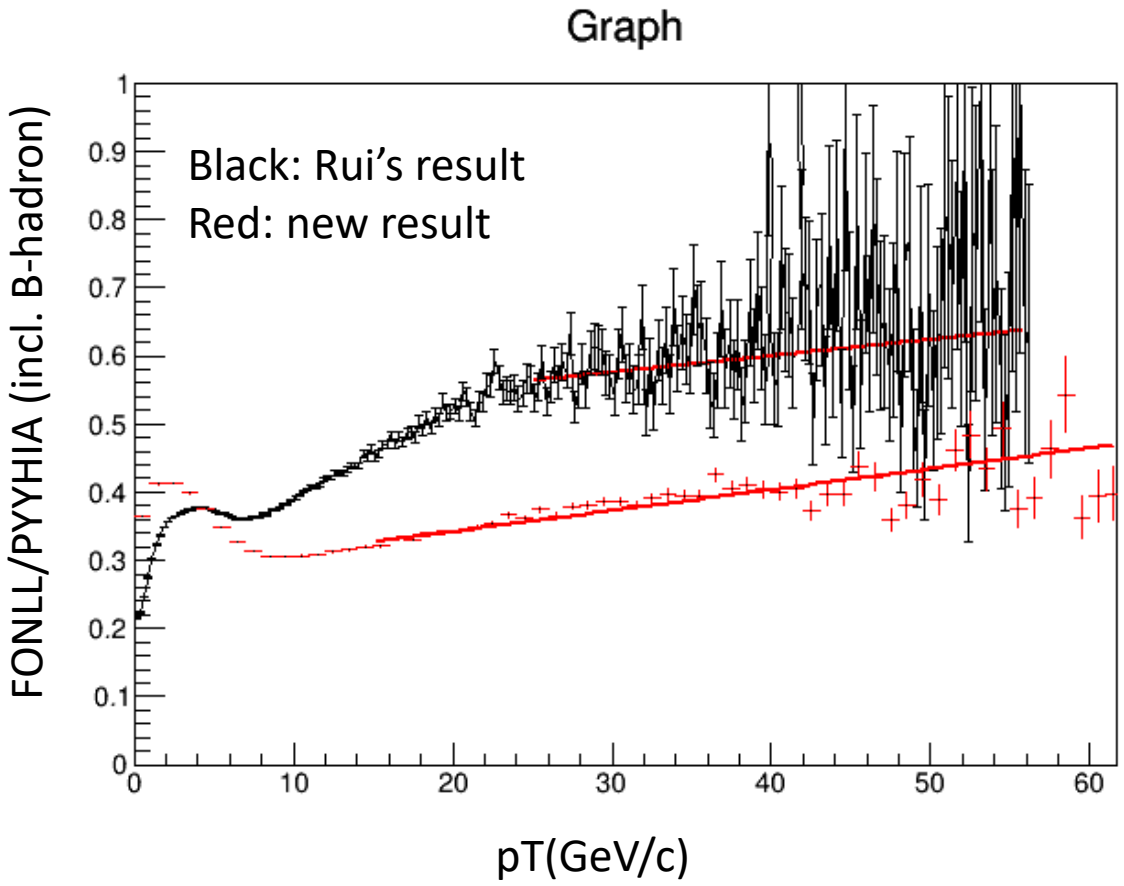
- Rui's pythia root file is no available anymore;
- We need to redo the pythia simulation to estimate the prompt ratio.

- all codes are at:
- https://github.com/wxie2013/LambdaC-PYTHIA8-simulation.git

- PYTHIA8302.
  - Color reconnection mode 2
  - 1b events generated
    - Inclusive Lc
    - B→Lc
    - Inclusive B-hadrons

Inclusive B-hadron and Weight comparison with Rui's results



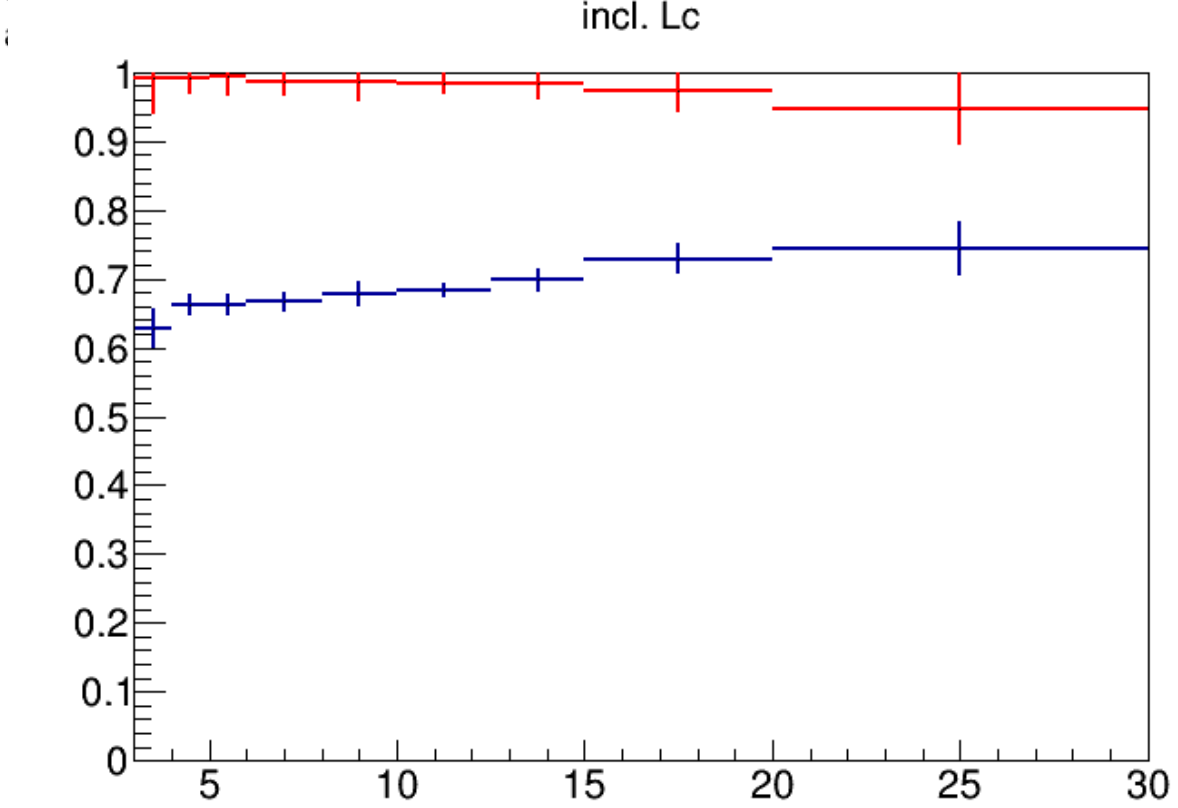


The new PYTHIA B-hadron cross section is a bit higher than Rui's result.

- Tunning or different version of pythia

p_T intervals (GeV/c)	fitted prompt ratio	PYTHIA	FNOLL	uncertainty (%)
3-4	0.85	0.67	0.98	21.2
4-5	0.85	0.70	not needed	16.5
5-6	0.8	0.70	not needed	11.3
6-8	0.88	0.68	not needed	6.8
8-10	0.73	0.67	not needed	9.6
10-12.5	0.78	0.66	not needed	20.5
12.5-15	0.89	0.66	not needed	11.1
15-20	0.89	0.68	0.90	23.6
20-30	0.89	0.70	0.91	21.3

Table 3: This table shows all the fitted prompt ratio got from the best MC resolution scale factor, the systematic uncertainty due to DCA fit and also the predicted prompt ratio from PYTHIA8



The prompt ratio are roughly consistent with Rui's results.

The small difference could be from

- Pythia tuning
- Pythia version

pT	PYTHIA	FONLL
3-4	0.62	0.991
4-5	0.66	0.993
5-6	0.66	0.993
6-8	0.67	0.987
8-10	0.68	0.988
10-12.5	0.684	0.984
12.5-15	0.70	0.985
15-20	0.73	0.973
20-30	0.75	0.947

- |y|<2 for pythia; FONLL |y|<7. Inconsistent
- My bug: FONLL spectra did not divide 1/lum/2 and bin width