Non-LHC experiments in HEPDATA

Matthew Wing (UCL)

- Initial comments.
- Data / experiments to be included ?
- More “exotic” data.

Initial comments

- It would be useful to do a survey of the needs or wishes of the non-LHC community.
  - Could be asking some number of people (e.g. PIs) for their views on inclusion of their data and whether anything special is needed when doing this.

- HEPDATA catalogues data from older experiments.
  - Always worked well and e.g. LEP, HERA, Tevatron data included.
  - Last LEP paper from 2009. There have been papers since: up-to-date ?
  - Tevatron and HERA papers from 2014 (H1+ZEUS also one from 2015), so being updated.
  - Are all papers from the experiments still included and is this up-to-date ?

Data / experiments to be included ?

- Looked for some examples of data not in HEPDATA but which are relatively straightforward and would fit in to the regular system.
- E.g. from T2K paper, “Measurement of the muon neutrino inclusive charged-current cross section in the energy range 1-3 GeV with the T2K INGRID detector”, arXiv: 1509.06940.
- Include T2K, MINOS, other neutrino data, particularly cross sections.
- CERN fixed-target experiments included. Checked NA61 and Compass. All included ? E.g. arXiv: 1309.1997 from NA61 not in.
- Need to survey for other experiments not included.

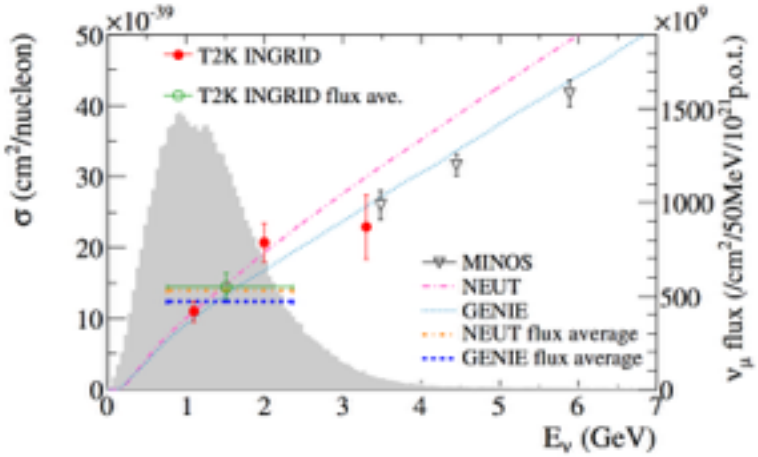
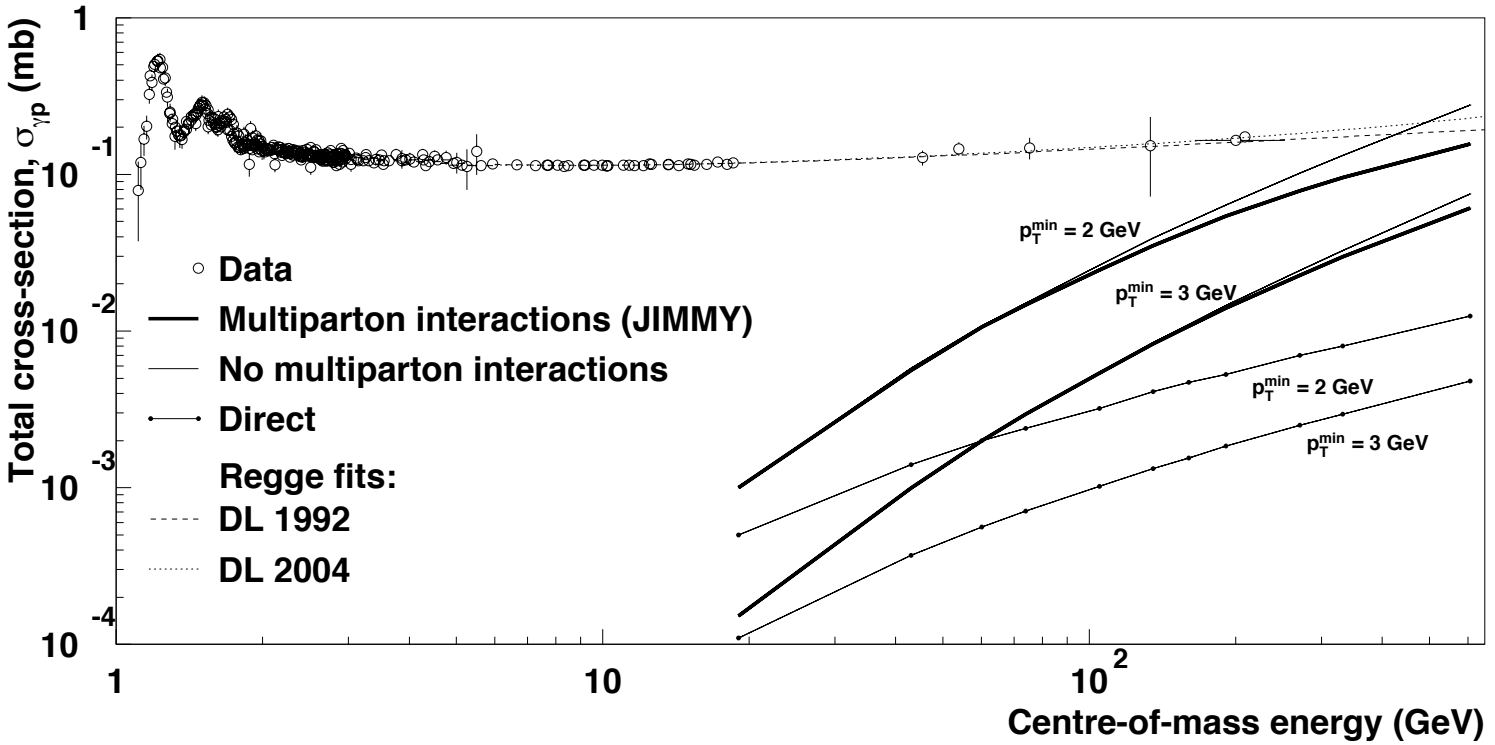


FIG. 26. Results of the ν_μ CC inclusive cross section on Fe. The energy dependent cross section measured by the MINOS near detector [1] and the flux-averaged cross section from INGRID [2] are shown with the NEUT (v.5.1.4.2) and GENIE (v.2.8.0) predictions. The T2K on-axis ν_μ flux is shown in gray. The T2K INGRID flux-averaged cross-section measurement and this result are consistent with one another.

Total cross sections

- Are all total cross section data, e.g. pp, gamma-gamma, etc., as in PDG in HEPDATA ?
- Other data relevant to MC tuning, models, GEANT, etc. ?
- When I made the plot below, it took a long time.



More “exotic” data

• E.g. Belle and BaBar have papers included in HEPDATA (~25 each), but e.g. BaBar have about 500 in total.

- Inclusion of particle decay data ?
- Relation to PDG ? Other variables, e.g. helicity, …
- How to be done ? E.g. just the papers, combinations like PDG (I guess not) ?

• Data on test-beam and instrumentation development ?

- Experiments have test-beam data which helped improve detectors and fed into GEANT.
- E.g. collaboration like CALICE has lots of useful data.
- Can the data be (easily) used ?
- Probably needs significant input from collaborations.
- Is this possible ? Data not corrected ?