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group meeting
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which card file?

ask Hayato-san to give me the total xsec for numu and nue
can send him the card files and tell him version of NEUT:
1) neut_numu.card
2) neut_nue.card
3) neut_numubar.card
4) neut_nuebar.card

Huang-san told me to send Hayato-san card files from **NEUT 5.3.2 src/t2kflux_zbs/Cards**
→ use these instead of **neut_num.card (nue,nmb)** e.g., in **mk_num.sh(nue,nmb)**?

Feb 2016, Huang-san told me to make sure cards were the same for 5.3.2 and 5.1.4.2

"For NEUT card, I don't think cards for 5.1.4.2 are totally the same with 5.3.2,
because the new version includes many new model. You have to check that.
If it is the same you can change the produced event number to be 3000. (For CPU time saving)"

I think this means to compare **5.1.4.2 neut_num.card** and **5.3.2 neut_numu.card**?

but maybe **5.1.4.2 neut_numu.card** and 5.3.2 neut_numu.card?
→ nope, these are exactly the same

ncgamma 5.1.4.2 neut_num.card	5.3.2 t2kflux_zbx/Cards/neut_numu.card	definition	action
NEBM-NEVNT 3000	NEBM-NEVNT 100000	number of events	Huang-san said 3000
NEUT-MODL 1	-	low energy pion mean free path models	
NEUT-MODH 1	-	high energy pion mfp models	
NEUT-FEFQE 1	-	Factor to modify pion quasi-elastic scattering mean free path	
NEUT-FEFABS 1.1	-	Factor to modify pion absorption mean free path	
NEUT-FEFINEL 1.	-	Factor to modify pion hadron production mean free path	
NEUT-FEFCOH 1.	-	Factor to modify pion foward scattering mean free path	specific to ncgamma 5.1.4.2 neut_num.card (not in 5.1.4.2/t2kflux_zbs/Cards/neut_numu.card)
NEUT-FEFQEH 1.8	-	Factor to modify quasielastic scattering mean free path	
NEUT-FEFCX 1.	-	Factor to modify charge exchange amplitude	supported in 5.3.2?
NEUT-FEFCXH 1.8	-	Factor to modify charge exchange mean free path	
NEUT-FEFQEHF 1.	-	Portion of QE scattering that has inelastic-like kinematics	
NEUT-FEFCXHF 0.	-	Portion of inel. scattering that includes true CX	
NEUT-FEFCOHF 0.	-	Amount of forward scatter relative to quasi-elastic	
NEUT-FEFCOUL 0	-	Pion trajectory modified by Coulomb field	
NEUT-RAND 0 NEUT-RAND 1	NEUT-RAND 1	random seed from FILE or the time	repeated and different?
Nucleon rescattering repeated	n/a	-	repeated and same?
-	NEUT-CRS 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	Multiplied factor to cross section on each mode. (neu)	no change because multiplying by 1
-	NEUT-CRSB 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	Multiplied factor to cross section on each mode. (neu-bar)	

- add changes to 5.3.2 neut_numu.card?
- OR, use ncgamma 5.1.4.2 neut_num.card?

try to make cross section table

- start with **ncgamma 5.1.4.2 neut_num.card** → Hiro thinks that's ok

- mc/neut/neut_5.3.2/src/neutsmpl/Linux_pc/
- ./dumptotpau t2kflux_zbs/neut_num.card

```
NECARDEV : INPUTTED PARAMETER
NECARDEV : NEV  =  0
NECARDEV : IDPT in the card was set to  0 but this should be +-12, +-14.
```

try with **5.3.2 neut_numu.card**
SAME PROBLEM

→ Emailed Hayato-san
- neut_num.card or neut_numu.card?
- or a different card for dumptotpau?

MC scales

- Emailed Hayato-san

- suggests 5.3.3 if planning to apply reweights (fix for reweight)
  https://www.t2k.org/asg/xsec/niwgdocs/neut/neut_5.3.3_maqefix_t2krw_v1r27p3.tar.gz (added 10 May 2017)

- Mike said 5.3.2 in March, and Hayato-san replied and did not object to 5.3.2

- I think I should update to 5.3.3?

MC scales

- nudeex_n.F and nudeex_p.F are modified in neut 5.4.0, compared to neut_5.3.3.
- Could you confirm the one in neut_5.4.0 is the latest one?
  https://www.t2k.org/asg/xsec/niwgdocs/neut/NEUT5.4.0

- I use nudeex_n.F and nudeex_p.F from ncgamma svn

- **ncgamma svn** and **5.4.0** are exactly the same
  (comments 2014.08.11 Revise Ankowski spectral factor)

- **5.3.3** and **5.3.2** are exactly the same
  (comments 2011.10.27 by Ueno-san)

- **ncgamma svn** and **5.4.0** are more recent than **5.3.3** and **5.3.2**

- update to 5.3.3, but not to 5.4.0?

MC scales

- Also, you'd better start from the same card as used for the ND280. At that time, ND280 used spectral function mode and thus, both CCQE and NCEL are using spectral function model consistently. However, those are reweighted to CCQE and we are not sure how correct the NCEL cross-section is.
- I think they have not changed the (interaction related) parameters from default other than the parameter NEUT-MDLQE 402
- In order to make your work simple, I suggest you to remove all the parameters or comment them out..

- NEUT-MDLQE 021 commented out in neut_num.card
- not in neut_numu.card
- so which card file?

MC scales

- >> When I compare them, the major differences are NEUT-FEF* variables that
  >> seem to be related to pions that are included in neut_num.card but not in
  >> neut_numu.card. Do you know if these are important to the ncgamma analysis?

  Most of the time, it does not but gamma rays are emitted if the
  pions are abosorbed and this may make small differences.

- include these in whichever card file I use
- neut_num.card is ok?

MC scales

- neut_num.card

- nucleon rescattering section repeated → probably mistake
- deleted repeat

- NEUT-RAND 0 and NEUT-RAND 1 → debugging purposes
- deleted NEUT-RAND 0

MC scales

- If you want to use dumptotpau, please add the following lines in the card..

  EVCT-IDPT 14
  EVCT-MPOS 2
  EVCT-RAD 100.
  EVCT-MDIR 1
  EVCT-DIR 0. 0. 1.
  EVCT-MPV 1
  EVCT-PV 600.

- added to neut_num.card

- error…

```
 Loading Cross section table for Multi-Pi productin
 ---> Loading GRV98 modified version
open: No such file or directory
apparent state: unit 87 named ./98mod_p.dat
last format: list io
lately writing sequential formatted external IO
Abort (core dumped)
```