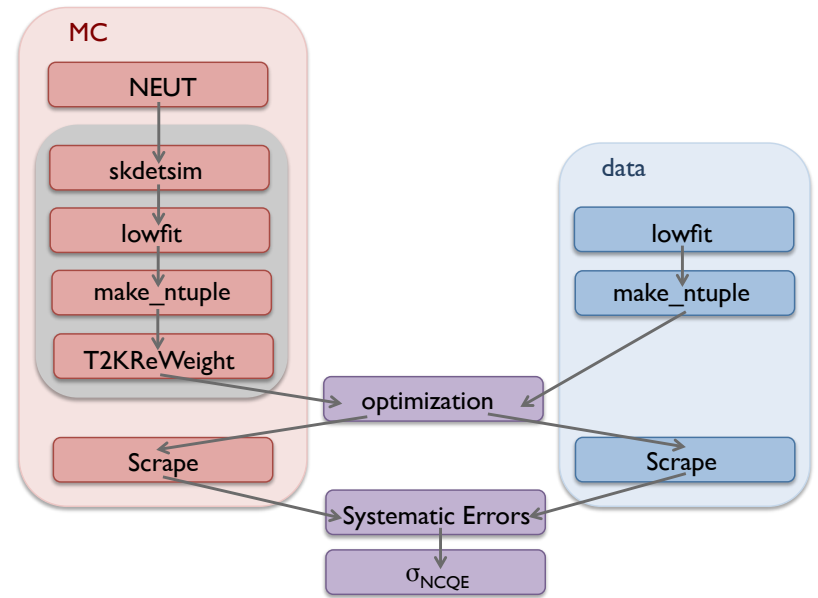


ncgamma analysis tools



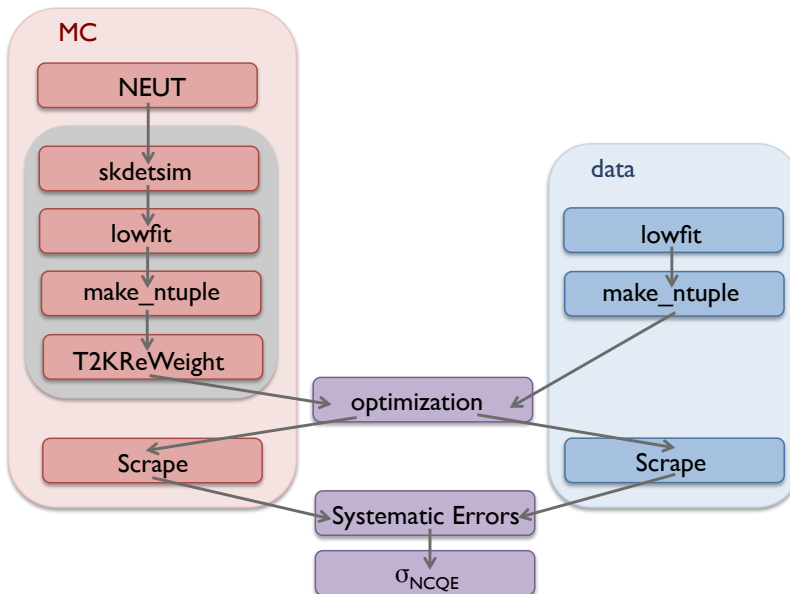
Emailed Hayato-san about NEUT 5.3.2 issues

- running from t2kflux_zbs, I had an error that couldn't find directory qelSfData
- noticed in neutsmpl that qelSfData was a link to crsdat/qelSfData, which was in turn a link to crsdat/qelSfData.l.2l.
- however, qelSfData.l.2l directory is empty
- made a link in t2kflux_zbs to crsdat/qelSfData.l.03

- Hayato-san said that was strange, looked at repository again and qelSfData.l.2l is not empty
- I will change back to qelSfData.l.2l

3e5 NEUT 5.3.2 events of each of numu, nue, numubar

- neutfiles have a size, but 17 MB instead of 18 MB from Jan 17
- err/ are size 0, and are empty
- out/ looks ok
- can't really test until process everything → use skdetsim like Fukuda-san



standalone skdetsim for .dat generated by NEUT

- immediately after generated AND after neut_select to remove high energy events
- Fukuda-san told me to use his sample.card and test.csh
- in test.csh, change idir and f_in (also added odir ncgamma/mc/skdetsim/output/)
- easy, test.csh basically just does ./skdetsim

- mv sample.card sample.card.bk
- SKCNTL-FILEFORMAT 0 → change to 1 - what does that mean?

- make
- ./test.csh
- 30 min and still waiting...

Fukuda-san NEUT 5.3.2

- `/usr/local/sklib_g77/neut_5.3.2/src/t2kflux_zbs/` did not have `neut_num.card`, `neut_nue.card`, or `neut_nmb.card`
- `/home/fukudada/ncgamma/mc/neut/neut_5.3.2_g77/src/t2kflux_zbs/` only had `neut_nmb.card`
`neut.card?`
`neut_5.3.2_numu.card?`
- `/home/fukudada/ncgamma/mc/neut/neut_5.3.2_g77/src/neutcore/` NEEDS updated `nudeex_p.F`
`nudeex_n.F`
- why did you need to modify `neut_nmb.card`?
`CNEUT-MDLQE 021` → `NEUT-MDLQE 021`

Rewrite T2KReWeight NCQE

- compare Alex version to v1r27p2
- ncgamma/T2KReWeight/

```
[~/ncgamma/T2KReWeight@sukap001[332]_% ls  
BANFF.sh          NIWG.sh          genWeightsNC_NIWG.cxx  
BANFF_PREFIT.sh  PrepareBanffNQS.py genWeights_2012a.cxx  
FLUX_PREFIT.sh   XSEC_PREFIT.sh   genWeights_ncgamma.cxx  
MAQE.sh          env.csh  
Makefile         env.sh
```

env.csh

```
#!/bin/csh
setenv T2KREWEIGHT /home/ahimmel/ana/T2K/T2KReWeight/TestVer
setenv PATH $T2KREWEIGHT/app:$PATH
setenv LD_LIBRARY_PATH $T2KREWEIGHT/lib:$LD_LIBRARY_PATH
setenv JNUBEAM $T2KREWEIGHT/JReWeight
setenv NIWG $T2KREWEIGHT/NIWGrWeight
#setenv GEANTRW $T2KREWEIGHT/GeantReWeight
setenv NIWGREWEIGHT_INPUTS $NIWG/inputs
setenv JREWEIGHT_INPUTS $JNUBEAM/inputs
#setenv GEANTREWEIGHT_INPUTS $GEANTRW/inputs
#setenv NEUTROOT=/home/tmw23/working/NEUT/neut_5.1.4.2
setenv NEUTROOT /home/atmpd/neut/neut_5.1.4.2
#setenv NEUTROOT=/home/huangkx/t2k/alex/mc/neut/tags/5.1.4.2
#setenv GENIE=$HOME/t2k/GENIE
#setenv GENIELIB=$GENIE/lib
#setenv PYTHIA6 /usr/local/sklib_gcc412/pythia6/v6_424
#setenv LHAPATH $HOME/t2k/LHAPDF
#setenv LOG4CPP=/home/pablofer/LOG4/log4cpp/src
setenv NEUT_ROOT $NEUTROOT
setenv LD_LIBRARY_PATH $NEUT_ROOT/src/reweight:$NEUT_ROOT/lib:$LD_LIBRARY_PATH
```

JNUBEAM and NIWG are also in Alex's directory, do they also need modification?
doesn't have OAANALYSISLIBS, so maybe I don't need OA analysis?
GEANTRW is commented, but I am going to use it.

Alex probably working with ~v1p17

```
[/home/ahimmel/ana/T2K/T2KReWeight@sukap001[356]_% ls  
HEAD TestVer app config_command v1r15p1 v1r17 v1r17_od_wskdet
```

actually, it's 1.15.1 (from 2012)

/home/ahimmel/T2K/T2KReWeight/TestVer/VERSION

Compare TestVer to v1p27p2

```
/home/ahimmel/ana/T2K/T2KReWeight/TestVer@sukap001 [360]_% ls
CVS          NIWGRWeight  VERSION      configure    lib  src
JReWeight    README       app          env.sh      make
Makefile     T2KReWeight.xcworkspace bin          example_scripts neut
```

looks very different

- for example, JReWeight and NIWGRWeight are now separate from T2KReWeight
- app/ has fewer, and different, files

Searching for Alex's modifications

- can't find anything where "immel" commented
- one instance of NCQE

```
/home/ahimmel/T2K/T2KReWeight/TestVer[sukap001 1020] grep -r NCQE ./*  
./neut/reweight/NReWeightNuXSecNC.h: bool fRewQE; ///< reweight NCQE?
```

- can't find equivalent in /home/sklb/software/GlobalAnalysisTools/,
no neut/reweight?

Noticed “ncgamma”

- app/genWeights_ncgamma.cxx
- based on genWeights_2012.cxx
- diff -u genWeights_2012.cxx
/home/ahimmel/T2K/T2KReWeight/app/genWeights_ncgamma.cxx

+ (things in Alex but not v1r27p2)

- SK__nc.h → instead of h1, I think
- SK__nc (or h1) in src/
- .cxx and .h
- **continue from here!!**

Koshio-san and NEUT 5.3.2 reweight tools

- with Hayato-san, compiled reweight tools for NEUT 5.3.2 with gcc
- checked out NEUT 5.3.2 from svn - same
- modify neut_5.3.2/neutsmpl/EnvMakeneutsmpl.csh with setenv FC gfortran usually, I just type setenv FC g77 while in neutsmpl/, is that ok? why gfortran instead of g77?
- modify config/linux.cv (actually, linux.cf) by removing -lgmp what does this mean? what are the #? not comments?

```
# ifndef FortranLibraries
#   ifdef HasG2C
#     define FortranLibraries -lgfortran -lm -lgmp
#   else
#     define FortranLibraries -lf2c -lm
#   endif
# endif
```

EnvMakeneutsmpl.csh

NEUT 5.1.4.2

```
#setenv FC g77
#setenv FC gfortran
if (${?FC} == 0) then
    echo "EnvMakeneutsmpl: set environmental variable FC "
    exit 1
endif

if (($FC != "g77")&&(($FC != "gfortran"))) then
    echo "EnvMakeneutsmpl: only g77 and gfortran are allowed for the environmen\
tal variable FC"
    exit 1
else
    echo "FC=" $FC
endif
```

NEUT 5.3.2

```
setenv FC g77
#setenv FC gfortran
if (${?FC} == 0) then
    echo "EnvMakeneutsmpl: set environmental variable FC "
    exit 1
endif

if (($FC != "g77")&&(($FC != "gfortran"))) then
    echo "EnvMakeneutsmpl: only g77 and gfortran are allowed for the environmen\
tal variable FC"
    exit 1
else
    echo "FC=" $FC
endif
```

Koshio-san and NEUT 5.3.2 reweight tools

- source /usr/local/sklib_gcc4.8.5/cshenv_gcc4.8.5_skofl_16c+atmpd_16c
not gcc and 14c?
- setenv FC gfortran - isn't this already done in EnvMakeneutsmpl.csh?
- setenv NEUT_ROOT /disk01/usr3/koshio/t2k/ncgamma/170508/neut_5.3.2/
already done in ncgamma/skenv_py.csh
- ./Makeneutsmpl.csh - ok
- cd ../t2kflux_zbs/ and ./Maket2kneut.csh - ok
- cd ../reweight/ - never did this before?
- setenv NEUTROOT /disk01/usr3/koshio/t2k/ncgamma/170508/neut_5.3.2/
already done in ncgamma/skenv_py.csh
- make lib
- svn co <https://kmcvs.icrr.u-tokyo.ac.jp/svn/rep/t2ksk/ncgamma/T2KReWeight>
this is Alex's version, which is old
- modify env.csh by setenv NEUTROOT
/disk01/usr3/koshio/t2k/ncgamma/170508/neut_5.3.2/
- source env.csh
- make clean
- make
- does NReWeight just work with T2KReWeight v1r27p2?