update

Corina Nantais
Group meeting
28 February 2017

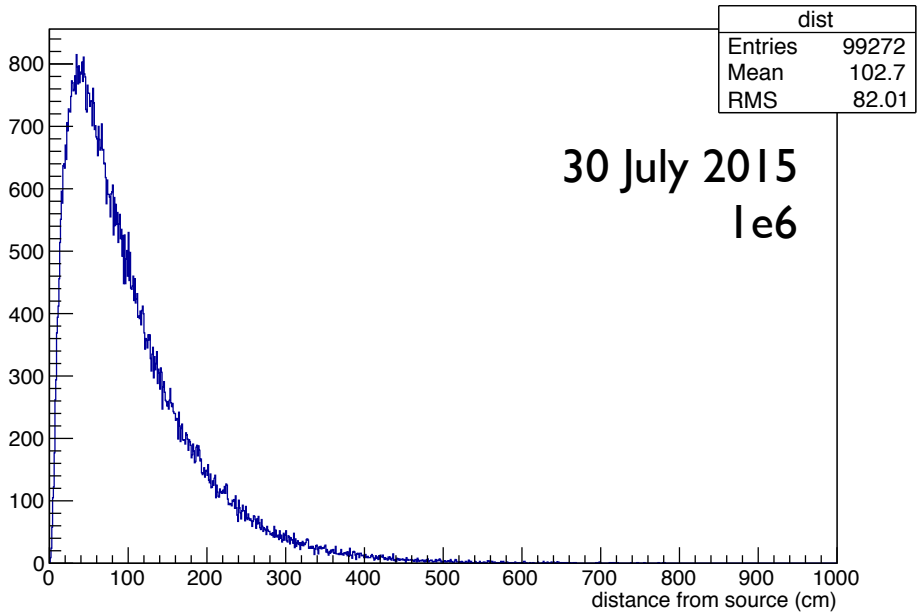
E493 parasite

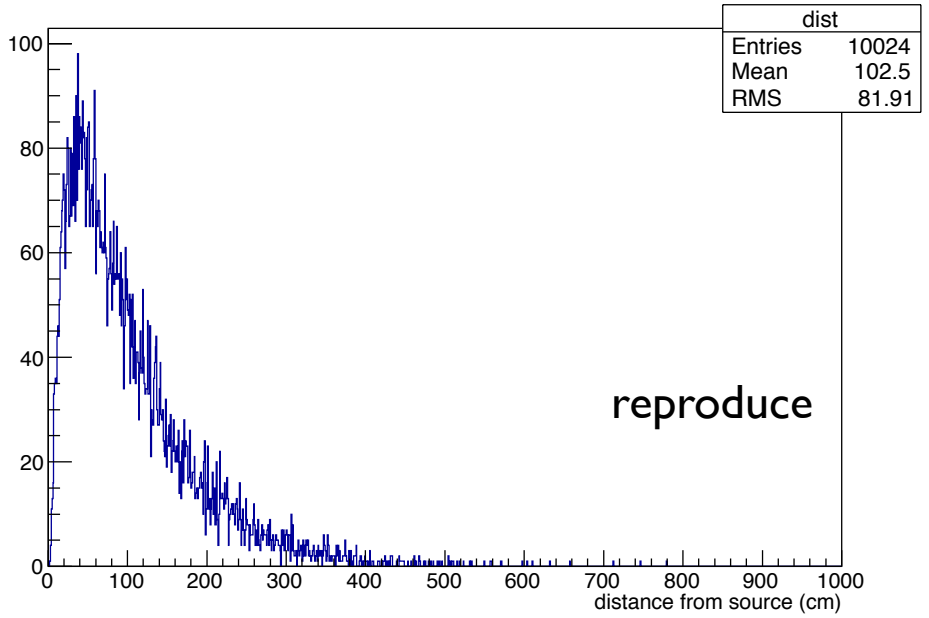
- neutron distance in water
- ncgamma analysis tools and the new Kamioka computer system

How far do neutrons travel in water?

- from July 2015
- FLUKA
- cylinder of water, 8 m length and 8 m diameter
- 500 MeV neutron momentum (125 MeV neutron kinetic energy)
- set a threshold of 3e-10 GeV/c^2 (thermal)
- ENDRAW (end of event) instead of BXDRAW (boundary crossing)
- stopping ICODE = 31
- ng = 1, so it's the initial neutron
- calculate distance from the start of water cylinder

10% of incident neutrons





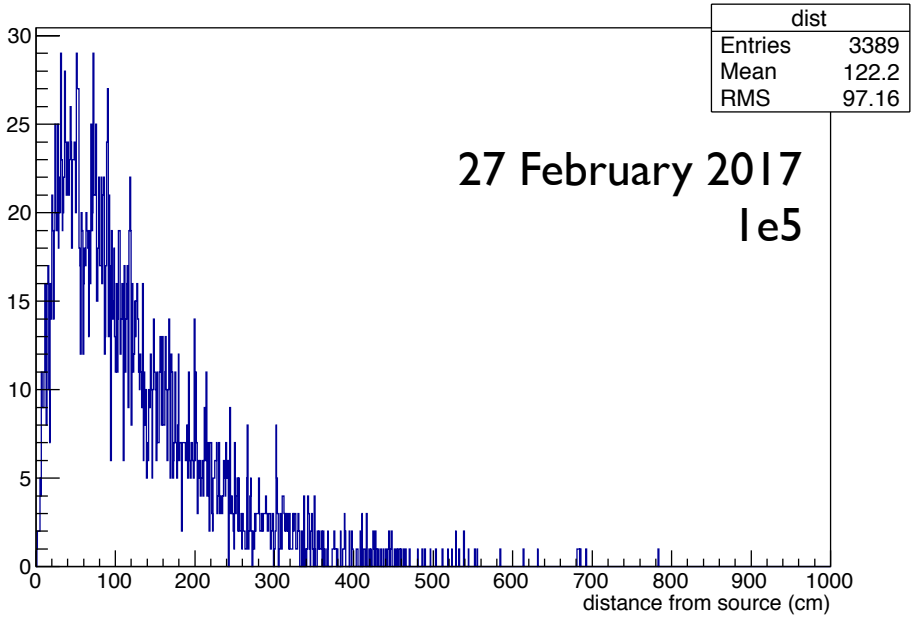
How far do neutrons travel in water?

- 392 MeV neutron kinetic energy

3% of incident neutrons

8% of those stopping neutrons within 25 cm

dist->Integral(1,26)



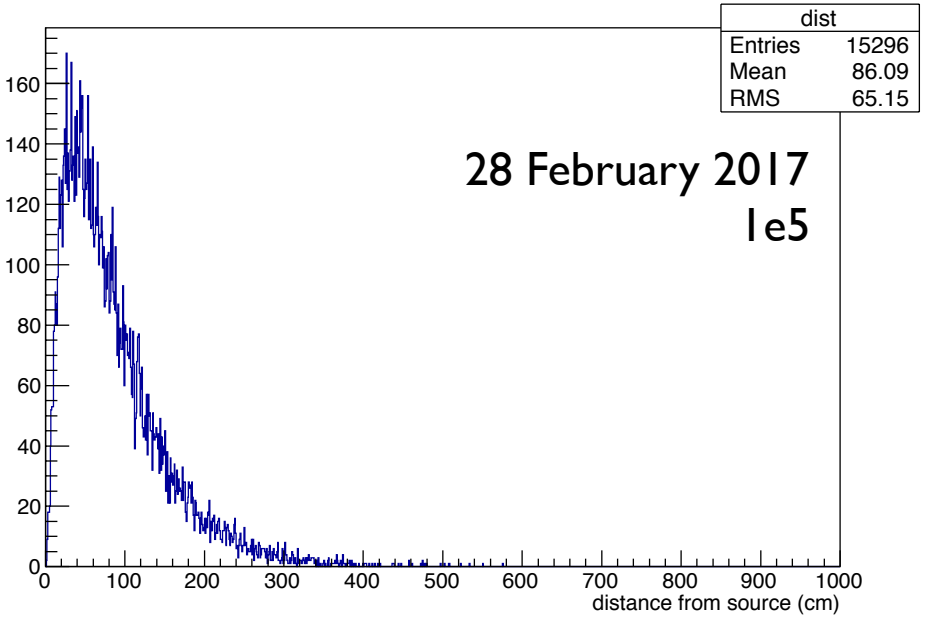
How far do neutrons travel in water?

- 80 MeV neutron kinetic energy

15% of incident neutrons

13% of those stopping neutrons within 25 cm

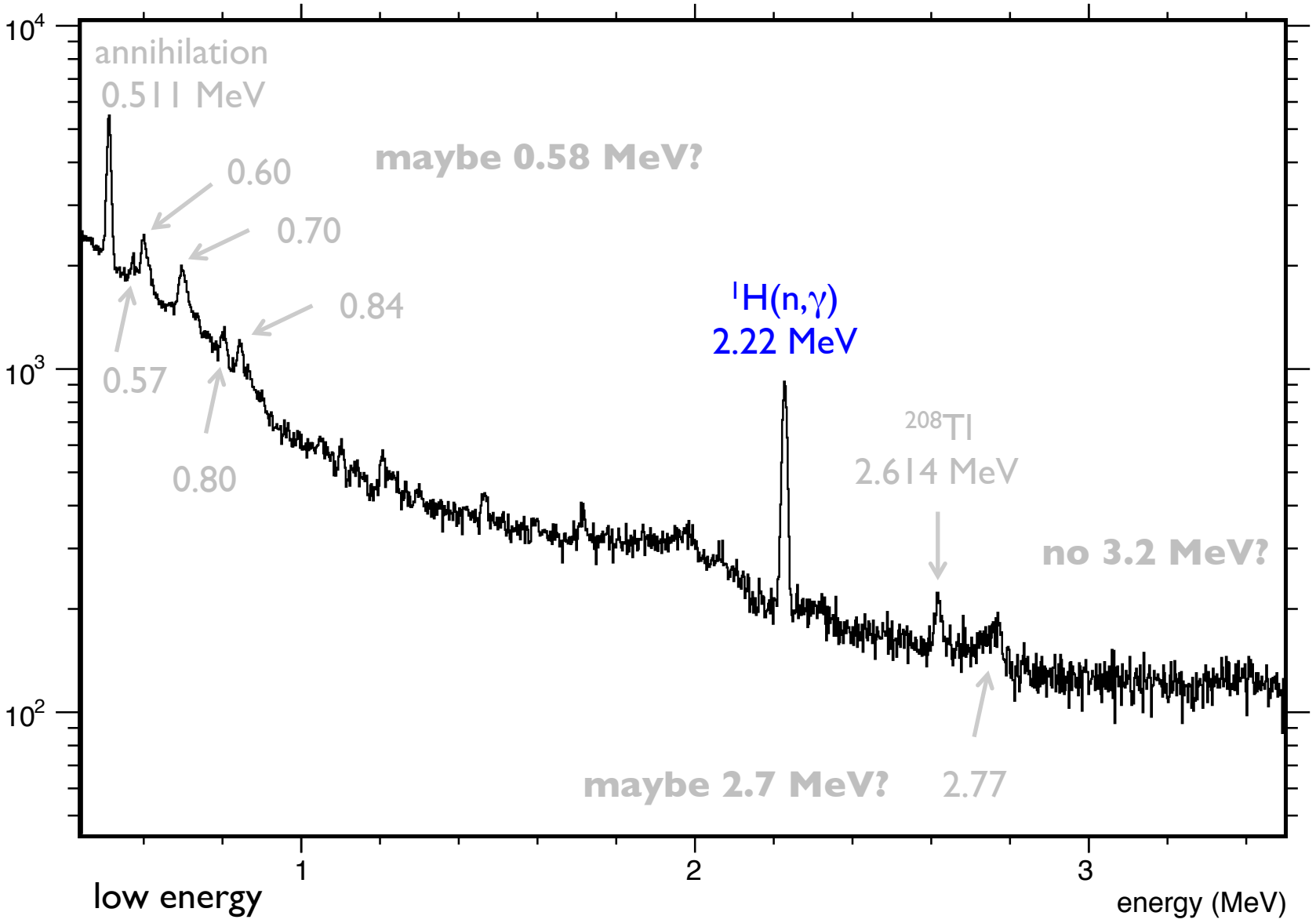
dist->Integral(1,26)



80 MeV neutron kinetic energy in E465

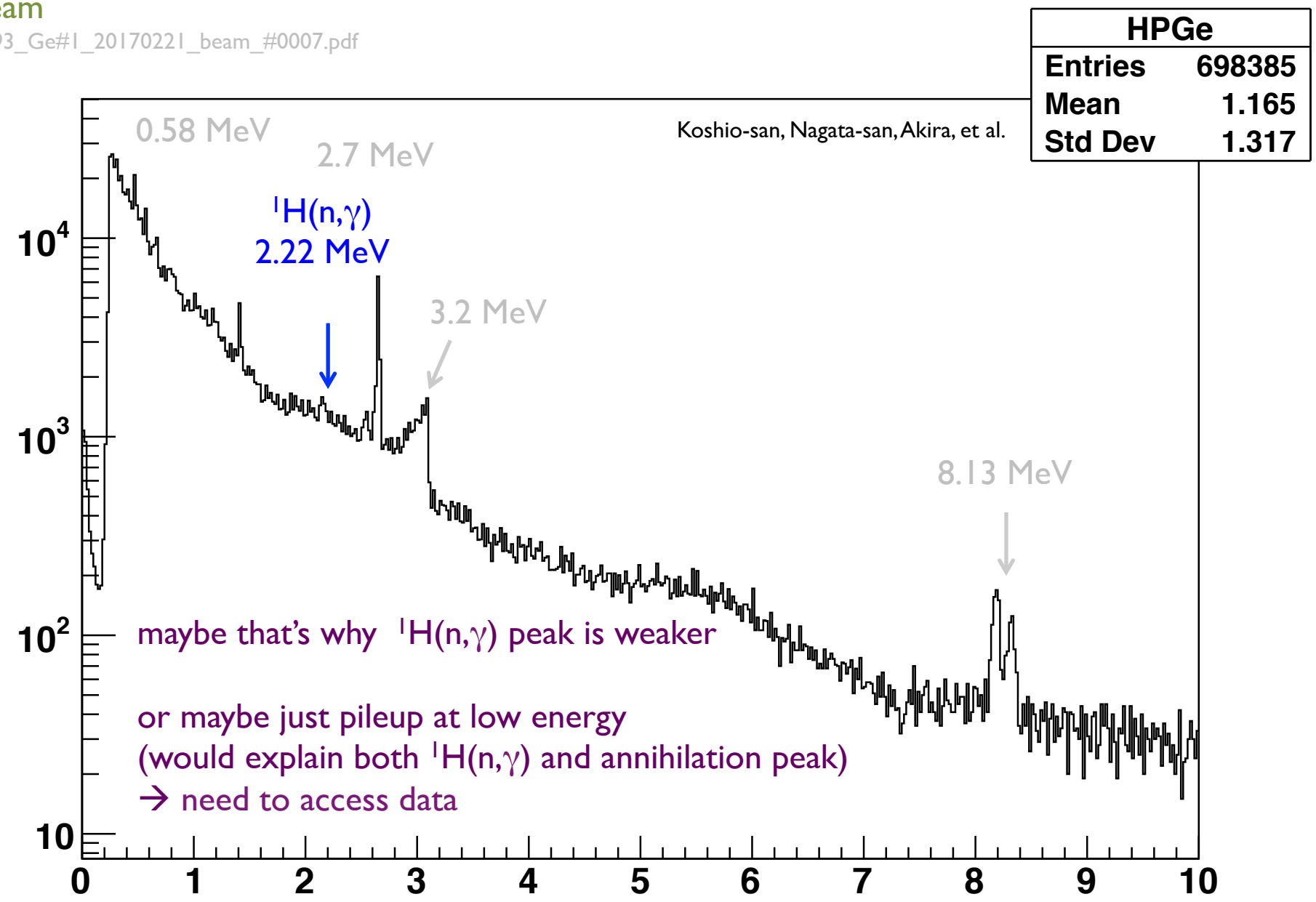
30 cm from water target, Pb shielding, 40 nA intensity, 3580 s livetime

20160612_1744_Ge_beam_physics_0029



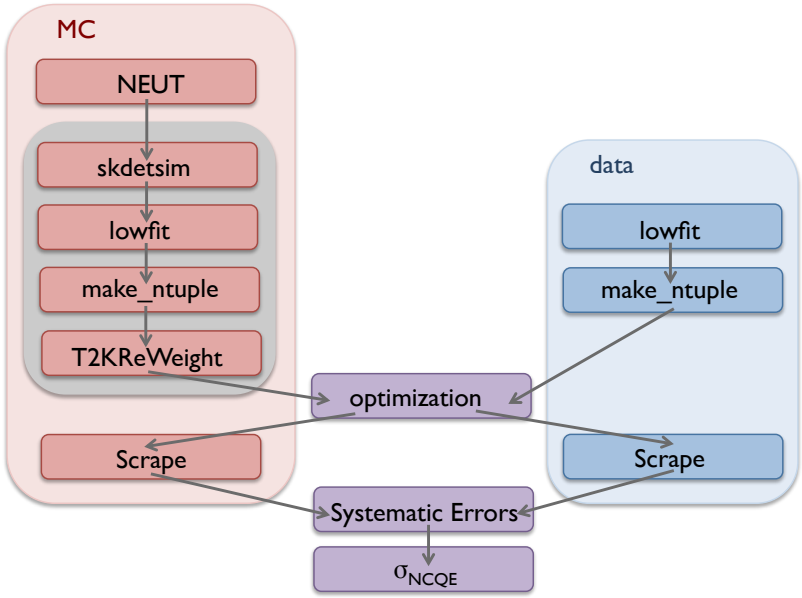
392 MeV neutron kinetic energy in E493 beam

E493_Ge#1_20170221_beam_#0007.pdf



ncgamma analysis tools

work with the
new Kamioka computer system
from February 2017



svn → **solved**

https://kmcvs.icrr.u-tokyo.ac.jp/svn/t2ksk/ncgamma

- couldn't connect via link after username and password
- couldn't access via command line after password, and username

- Fukuda-san told me he also had problems
- Koshio-san too, so he asked Shinmasu-san

```
Authentication realm: <https://kmcvs.icrr.u-tokyo.ac.jp:443> Authorization kmgate01-user
Password for 'koshio': <- Just Enter
Authentication realm: <https://kmcvs.icrr.u-tokyo.ac.jp:443> Authorization kmgate01-user
Username: koshio_s <- enter your account name with _s  (koshio -> koshio_s)
Password for 'koshio_s': <- enter your usual login password
```

- apparently for security

- (Fukuda-san had checked out code from svn before new computer system)

.cshrc

- used to be /home/skofl/sklib_g77/cshenv_g77_skofl_15a+atmpds_15a
- 15a doesn't exist anymore
- /home/skofl/sklib_g77/ has 14c and 16c libraries
- why isn't there 16c for csh?
- now changed to 14c (Fukuda-san too)

What is the difference between 14c and 16c? and between 15a?

→ ask in tonight's T2K-SK meeting

```
/home/skofl/sklib_g77[sukap001 1005] ls -l
total 40
lrwxrwxrwx  1 skofl sk   35 Dec  2  2014 atmpd-const-trunk -> ../sklib_gcc4.8.2/atmpd-const-trunk
lrwxrwxrwx  1 skofl sk   33 Dec  2  2014 atmpd-const_14c -> ../sklib_gcc4.8.2/atmpd-const_14c
lrwxrwxrwx  1 skofl sk   33 May 17  2016 atmpd-const_16c -> ../sklib_gcc4.8.2/atmpd-const_16c
drwxr-xr-x 10 skofl sk 4096 Feb 18 11:38 atmpd_14c
drwxr-xr-x 10 skofl sk 4096 Jan 19 13:29 atmpd_16c
drwxr-xr-x  5 skofl sk 8192 Jan 19 10:54 cern
-rw-r--r--  1 skofl sk  685 Feb 18 10:13 cshenv_g77_skofl_14c+atmpd_14c
drwxr-xr-x  7 skofl sk 4096 Feb 18 10:14 neut_5.3.2
drwxr-xr-x  7 skofl sk 4096 Jan 19 13:11 neut_5.3.6
drwxr-xr-x  8 skofl sk 4096 Jan 19 13:09 root_v5.28.00h
lrwxrwxrwx  1 skofl sk   22 Feb 17 20:00 skam -> ../sklib_gcc4.8.5/skam
lrwxrwxrwx  1 skofl sk   29 Feb 17 20:00 skofl-trunk -> ../sklib_gcc4.8.5/skofl-trunk
drwxr-xr-x 13 skofl sk 4096 Feb 19 08:08 skofl_14c
drwxr-xr-x 13 skofl sk 4096 Feb  3 13:45 skofl_16c
/home/skofl/sklib_g77[sukap001 1006]
```

ROOT

want to remove dependencies on Alex Himmel's directory

used to be

skenv_py.csh

setenv ROOTSYS /home/ahimmel/root_v5.28.00b

now by default

root 5.28/00h 24 November 2011

echo $ROOTSYS

/home/skofl/sklib_g77/root_v5.28.00h/

same for Fukuda-san

Nakajima-san says that's the version being used by SK, although old

python

want to remove dependencies on Alex Himmel's directory

used to be

alexenv.csh

- setenv PYTHONSTARTUP /home/ahimmel/Root/rootlogon.py
- setenv PYTHONPATH /home/ahimmel/lib/python:/home/ahimmel/Root:${PYTHONPATH}

now by default

python 2.7.5 06 November 2016

echo $PYTHONPATH

/opt/kusu/lib64/python:/opt/kusu/lib/python:/opt/primitive/lib/python/site-packages:/opt/primitive/lib64/python2.4/site-packages:/opt/primitive/lib/python2.4/site-packages:/opt/primitive/lib64/python2.6/site-packages:/opt/primitive/lib/python2.6/site-packages

(no PYTHONSTARTUP)

same for Fukuda-san, I think

neut

used to be
skevn_py.csh
setenv NEUTROOT /home/atmpd/neut/neut_5.1.4.2

I have a modified version of 5.3.2 in my home directory

email from Hayato-san 25 February 2016, use 5.3.5 (instead of 5.3.2)

most up to date here is 5.1.4.2?

noticed 5.3.6 in /home/skofl/sklib_g77/

now by default
echo $NEUT_ROOT
/home/skofl/sklib_g77/neut_5.3.2/

same for Fukuda-san
Koshio-san said it probably doesn't matter, as long as spectral function modifications are there
→ ask in tonight's T2K-SK meeting

```
~[sukap001 1006] ls -l /home/atmpd/neut/
total 20
lrwxrwxrwx 1 atmpd sk   53 Jul  5  2010 neut_5.0.6 -> /net/sukond1/export/data/atmpd/sk4_mc/vectorgen_5.0.6
drwxr-xr-x 7 atmpd sk 4096 May 15  2011 neut_5.1.2
drwxr-xr-x 7 atmpd sk 4096 Oct 27  2011 neut_5.1.4
drwxr-xr-x 7 atmpd sk 4096 Jan 16  2012 neut_5.1.4.2
drwxr-xr-x 7 atmpd sk 4096 Sep 30  2011 neut_r11518
drwxr-xr-x 7 atmpd sk 4096 Oct 24  2011 neut_r16979
lrwxrwxrwx 1 atmpd sk   11 Oct 16  2011 pro -> neut_r16979
```

SterileAna

skenv_py.csh

setenv LD_LIBRARY_PATH "$SKOFL_ROOT/lib:/home/cnantais/ncgamma/SterileAna/lib:`$ROOTSYS/bin/root-config --libdir`:$LD_LIBRARY_PATH"

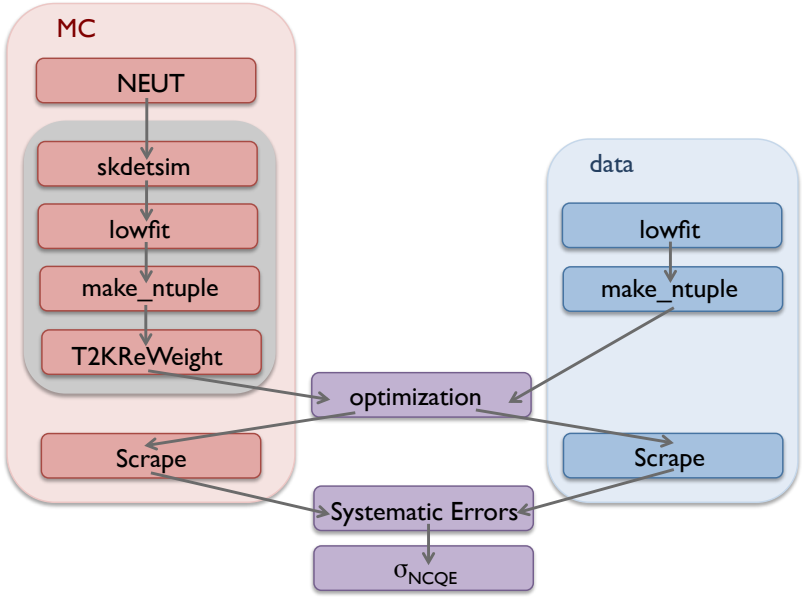
→ change to Prob3++ later **soon**

by default

echo $LD_LIBRARY_PATH

/home/skofl/sklib_g77/skofl_14c/lib:/home/skofl/sklib_g77/root_v5.28.00h/lib:/usr/local/lib:/usr/local/lib

Environmental variables and lowfit both look ok



- csh
- source alexenv.csh (skenv_py.csh)

looks ok, root and python work

- lowfit/ make

looks ok?

Fukuda-san said maybe he processed lowfit? for data?

Fukuda-san had started with MC side, having problems with skdetsim
he doesn't source alexenv.csh, set his own environmental variables? will send me details

T2K first reduction, cut on GPS

e.g., for lowfit/RunData.sh

used to be

/disk/sklb/t2k/1stred

changed to what I found

/disk01/sklb2/t2kdata/process/1stred

→ ask in tonight's T2K-SK meeting

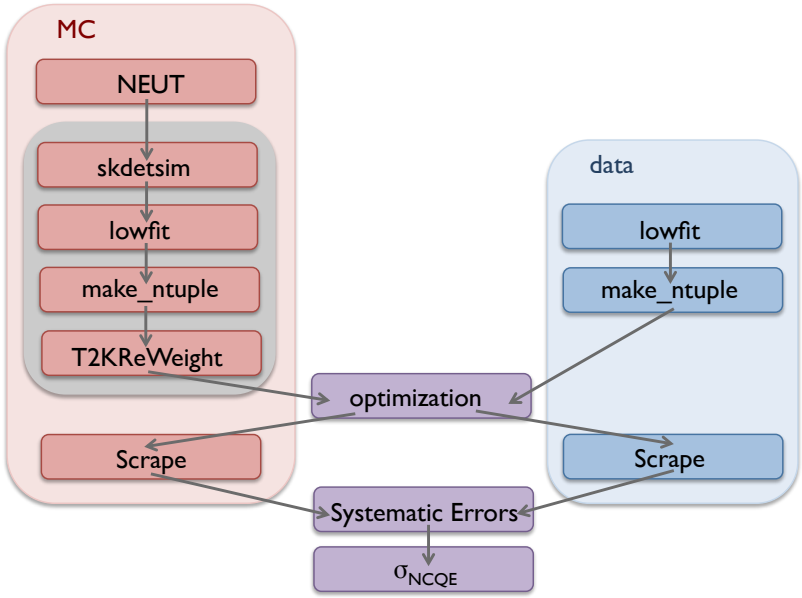
this is where you find SK beam summary and GPS information

looks the same, so no change

set sklb = /home/sklb/reduction/list

→ ask in tonight's T2K-SK meeting

Keep stepping through!



Currently stuck at lowfit/ for data

Lots to do…

Reproduce Run 4, compare intermediate steps to my Jan 2016 files

Reproduce Run1–4 results

Afterwards will update instructions on t2k.org

Other notes from ncgamma local meeting

Nakajima-san is interested in ncgamma

- lowe expert
- busy, so will just make suggestions

Ashida-san will join after March RCNP experiment

(Akutsu-san taking over Tristan's neutron tagging)

Keep in contact with Huang-san

- but he cannot touch data
- might have ideas on neutron tagging

Other notes from ncgamma local meeting

Modify the analysis code

- improve reduction step?
- use updated, retuned skdetsim (Nakajima-san in lowe)
- neutron tagging

- move from g77 to gcc

  (there is cshenv 16c in /home/skofl/sklib_gcc4.8.5/)

- Nakajima-san compiled and ran a version of skdetsim (Ka Ming's modified version), but not lowe version

Other notes from ncgamma local meeting

Goal: update (all data) by May T2K CM

report regularly in T2K-SK meetings (not in T2K-exotics, for now)

technical, ncgamma local meetings one day before T2K-SK meetings

tonight's T2K-SK meeting

- Koshio-san gives overview
- I ask questions about new computer system