Use of this cheat sheet assumes you have read and understood every word in the official *g12 Analysis Procedures, Statistics and Systematics* CLAS-NOTE 2017 - 002. The authors are not responsible for lost time due to blindly following the steps described herein.

1 Environment

For all analyses:

```
setenv CLAS_PARMS /group/clas/parms
```

For hadron analyses, use the g12 run index (and run 56855 for MC):

```
setenv CLAS_CALDB_RUNINDEX calib_user.RunIndexg12
```

For lepton analyses, use this run index (and run 10 for MC):

```
setenv CLAS_CALDB_RUNINDEX calib_user.RunIndexg12_mk
```

2 Simulation

2.1 Digitization

```
gsim_bat -ffread /home/clasg12/ffread.g12 \
-kine 1 -mcin events.part \
-bosout events.gsim -trig 2000000
```

For lepton analyses, use this ffread file:

```
/home/clasg12/lepton.ffread.g12
```

2.2 Smearing

```
gpp -Y -s -S -a2.73 -b1.7 -c1.93 -f1 -R56855 \
-P0x7f -oevents.gpp \
-A/home/clasg12/gpp_tagger_profile.bos \
events.gsim
```

For lepton analyses, use the option `-R10`.

2.3 Reconstruction

```
a1c -T4 -ct1930 -cm0 -cp0 -X0 -d1 -F \
-P0x1bff -z0,0,-90 -Aprlink_tg-90pm30.bos \
-oevents.a1c events.gpp
```

2.4 Analysis of Simulation

1. Topology dependent event slection
2. Standard `eloss` correction
3. g12 TOF knock-out
4. g12 Fiducial cuts
5. Notice:
   (a) no beam corrections
   (b) no momentum corrections

3 Analysis of Data

1. Topology dependent event selection. Analyze only complete runs, refer to the good-run list and sorting of bos event in the CLAS note.
2. Standard `eloss`
3. g12 Beam energy corrections
4. g12 Momentum corrections
5. g12 TOF knock-out
6. g12 Fiducial cuts
7. Notice for leptons:
   (a) g12 EC/CC particle identification cuts
   (b) g12 EC knock-out
   (c) g12 EC-specific fiducial cuts

3.1 Absolute Normalization Corrections

Use `g12-gflux-all` found in `/home/clasg12/local/scripts` to generate flux for "good" scalar intervals of the runs listed in the file *filelist.txt*:

```
g12-gflux-all filelist.txt good > flux.txt
```

1. Photon multiplicity correction (necessary if the `-A` option in `gpp` is not used)
2. Track-dependent efficiency map. The map was derived without using the start counter and addresses inaccurate simulation of other detector elements
3. If analyses require start counter timing selection, efficiency of the timing cut and detector efficiency must be applied