Analysing the data in Gaspware-XTRACKN

Click R - open an energy spectra in the format: G0#D.000X|l:16
X is the run number and D the detector number. Start with X = 00
View the different detectors: left click: [#+] or [#-] buttons in the low left corner
View the different runs: right click: [#+] or [#-] buttons in the low left corner

Open CM - opens a compressed matrix .CMAT
W = set gates
CW = display the gated projection
ZW = delete gates
MW = display gates
DW = list/delete/group gates
Q = display initial projection of the matrix

Recalibrate spectra (0.5kev/chan) click [EnCal] -> n (new) -> A(1)=0.5 -> (leave the rest empty)
Zoom in X: put the markers with SPACE and type 'e'(expand)
Zoom out: type 'ff'
Zoom in Y: mousewheel
Show peak energies: 'cp'
Find a specific energy, type 'p' and enter the energy value.

Auto-fit individual peaks: hold CTRL and left click the peak; in the terminal the energy, area and FWHM will be displayed
Fit (integrate) multiple peaks: set fit region with 'r', set peaks with 'g', select background left+rigt with 'b'. Click 'Fit'
Integrate manually: set integration region with 'i', background region with 'b' and click INT (middle right part of xtrackn)
!!! Before each fitting procedure type 'za' to delete all the previous markers

Clear the screen: type '='.

To add aditional spectra: Right Click and select "Add Line" or "Add Column"
To cancel any command added in the terminal type "Ctrl+D"
To exit: "Ctrl+C"

DF/ZF = open/close file for storing fit data
DK = Energy calibration / Peak-search signifiance
CV = Fit Gaussian
CJ = Integrate
SX/SY = Same X / Same Y

FULL LIST OF COMMANDS (can be found by pressing ''?'' in xtrackn)

********** COMMAND-LIST **********

spacebar Marker
AJ AG Automatic CJ, CG at marker position
B G I R S W Insert a marker of type B, G, I, R, S or W
CB CI CJ MI MJ Background, Integration, CB+CI
CG CV MG MV Gaussfit, CB+CG. Show markers
CP MP Automatic peak search. Show peaks
Dn Cn Mn Zn n Define, Execute, Show, Erase command string n=1...9
DD Change the display parameters
DE Define how to do efficiency correction
DG Define peak width (individual/common) for fit
DK AK Energy and Width calibration
DF DL Define output file for Area calculations
DT CT AT Recalibration using Trackfit
DW CW Define, Estract cuts from compressed matrix
DQ Define matrix and background subtraction mode
E Expand between last two Markers
X Expand around current cursor position
FF FX FY Full display Full_x Full_y
SX SY same X or Y scale for all windows
FO FU Set Y-maximum or Y-minimum by marker
H ? Help (this list)
K Energy calibration from previous 2 energies
L Lin/Log
N Input new spectrum
DN MN ZN Define display behaviour at input of new spectrum
OS Write out current spectrum
O= Postscript plot of current display
P Insert a peak by energy
Q Display projection of compressed matrix
V Marker writing also counts in channel
MZ Draw a line at zero counts
ZA Delete all B/G/I markers
ZB ZI ZJ ZG ZV Delete corresponding type of markers
ZF ZL Close output file for Area calculations
DP MP ZP Define, Show, Delete peaks in buffer
+ - Insert/delete a peak by marker
= Repeat the display
< > Shift display 3/4 to Left, Rigth
CTL_RIGHTARROW Increase # of windows adding one column more
CTL_LEFTARROW Decrease # of windows deleting last column
CTL_UPARROW Increase # of windows adding one row more
CTL_DOWNARROW Decrease # of windows deleting last row
CTL_C CTL_Y CTL_Z Stop

How to calibrate the energy for HPGe with XTrackn

1. Check for energy walk between runs. (look into all projections, run by run)
2. Load calibration spectra
3. Fit (ctrl+click) 2 peaks and click Cal2P. Input the correct energies
   If 'cp' does not identify all peaks, modify peaksearch significance with 'dk' + enter, enter, ... or select EnCal and input by channel
4. Click DT. Select calibration source. Enter, Enter... Select polynomial of 3rd/4th degree for a better fit.
5. Save coeff in file.
6. Move to the next detector (#+)
7. Ctrl+Click(DT) - will perform automatically step 4
8. Repeat to infinity from step 6.

FOR LaBR: at step 4 also input FWHM fit region (fit a peak after Cal2P to find the approx FWHM)

calibrate_planar_GE with X-rays from 152Eu: (add energies by hand.)

1	39.50000	2.9999999E-02
2	40.11000	2.9999999E-02
3	45.30000	2.9999999E-02
4	46.57000	2.9999999E-02
5	121.7817	3.0000001E-04
6	244.6975	7.9999998E-04
7	344.2785	1.7000000E-03
8	411.1165	8.0000004E-03
9	443.9650	6.0000001E-03

"Run by Run" calibration:

1. First calibrate with Eu (see above steps)
2. Create file with gammas from the runs you want to calibrate (file should have 2 columns: Energy Error)
3. DT -> select from file
4. After you calibrate de first detector, type CT
5. For filename input =.+ (mantains the same name but increments the extension)
6. Many enters for default options.
7. Wait command (...) [N] -> type Y. Otherwise it will do automatically everything and you will skip the magic.
8. At the end of the runs, CTRL+D and change to the next detector. Repeat from step 4.
9. The recal command for gsort should contain RUN specification:
   RECAL G0 Ge_ener.cal RUN 0 2 10 2047 2 20