Post Flight Calibration of DOSTEL with Heavy Ions During the First and Third ICCHIBAN Run at HIMAC, Chiba

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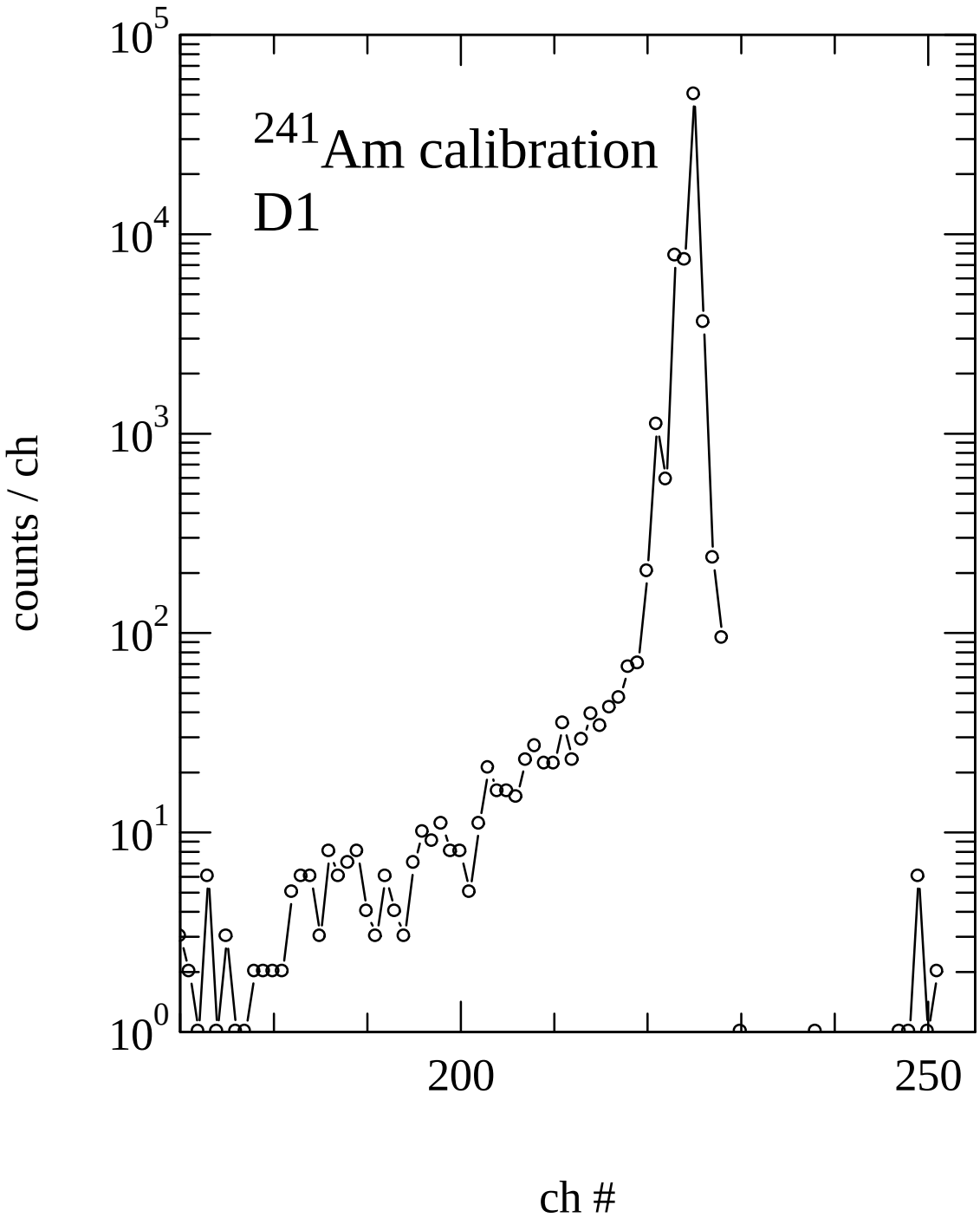
Calibration with ^{241}Am

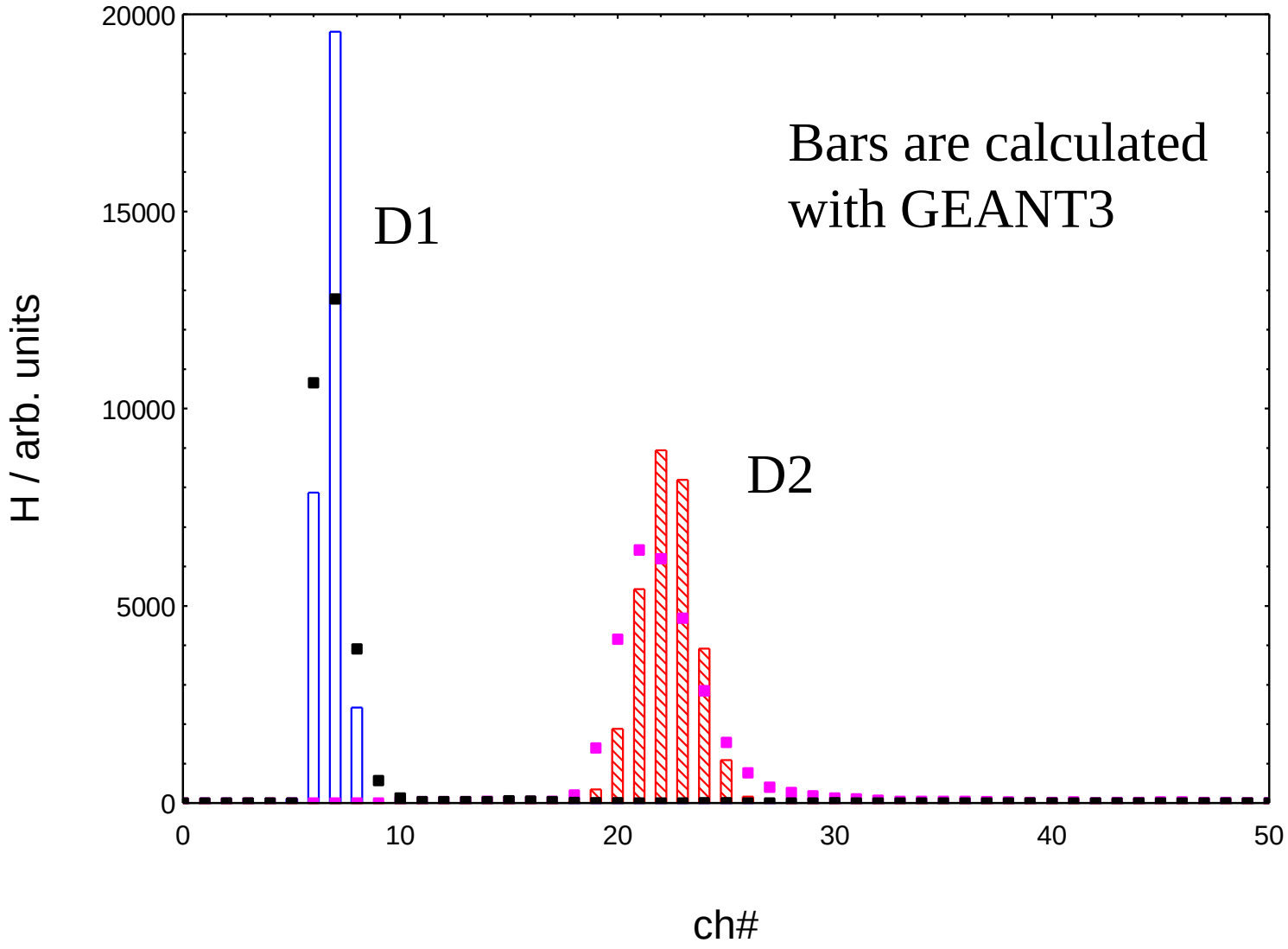
- in a vacuum chamber (pressure 0.1 hPa, distance 10 cm)
- the dead layer of the detectors is specified at about 0.1μm so it can be neglected and the peak is attributed to stopping alpha-particles of 5.48 MeV (their range in Si is about 28μm)

Calibration with ^{241}Am

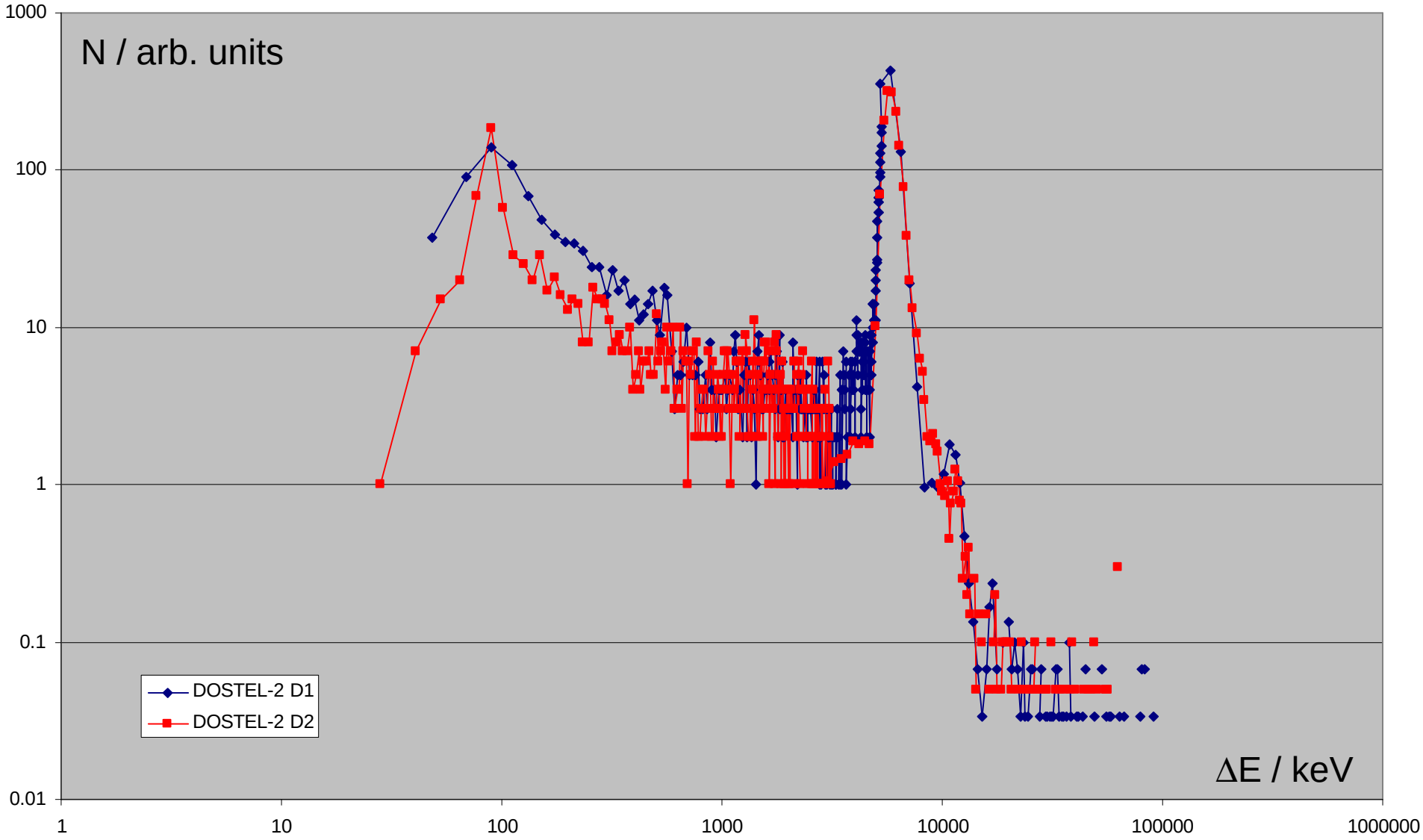
- the gain of the pulse amplifiers was reduced in order to yield the 5.48 MeV peak at the high end of the low energy deposit channels
- The ultimate response is calculated from the nominal gain of the pulse amplifiers which is better than 2%
- The overall linearity for the low and high energy deposit range was verified by using test pulses from a tail pulse generator


^{241}Am calibration
D1
counts / ch
ch #
10^0
10^1
10^2
10^3
10^4
10^5
200
250

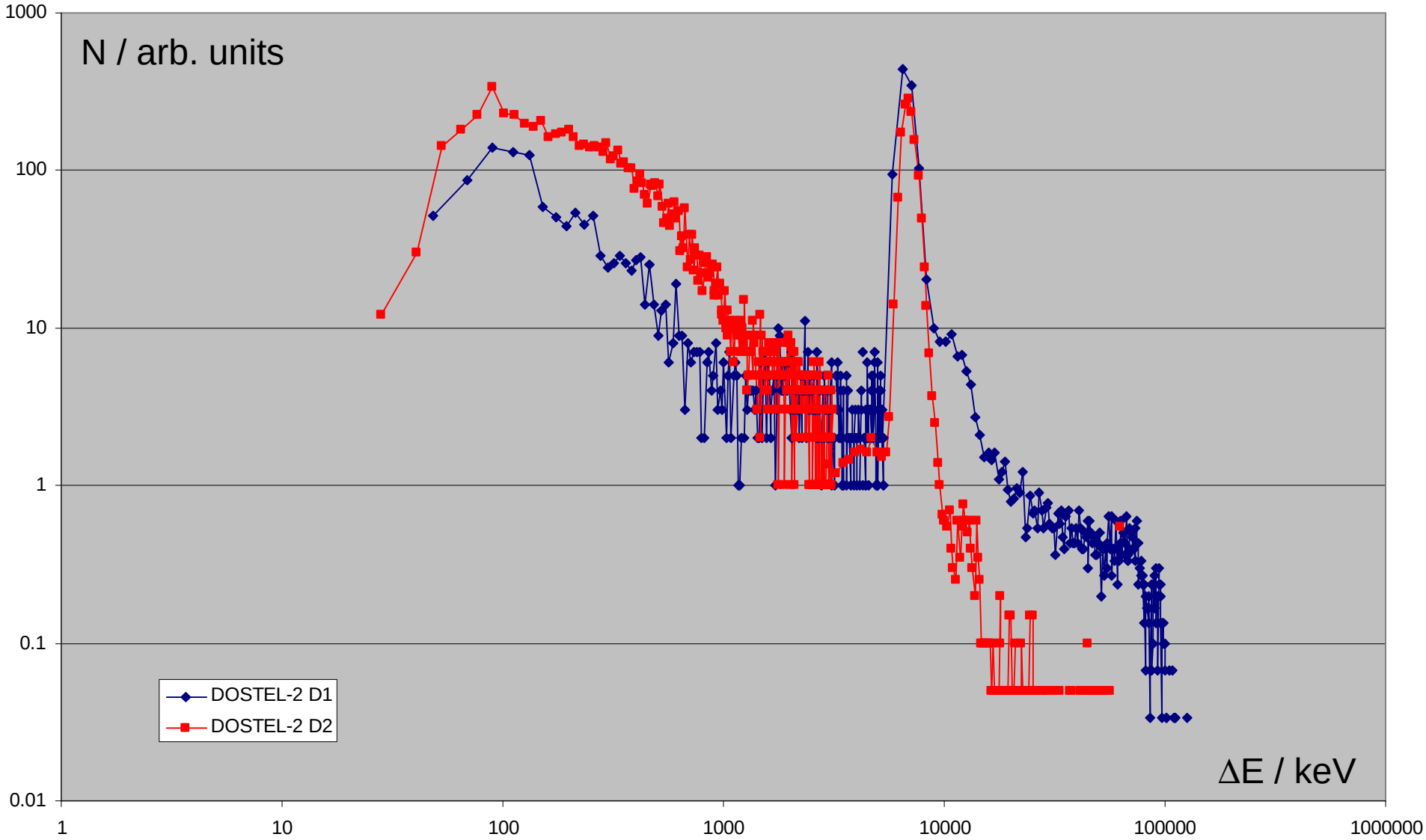
Calculated and Measured Channels for ^{12}C



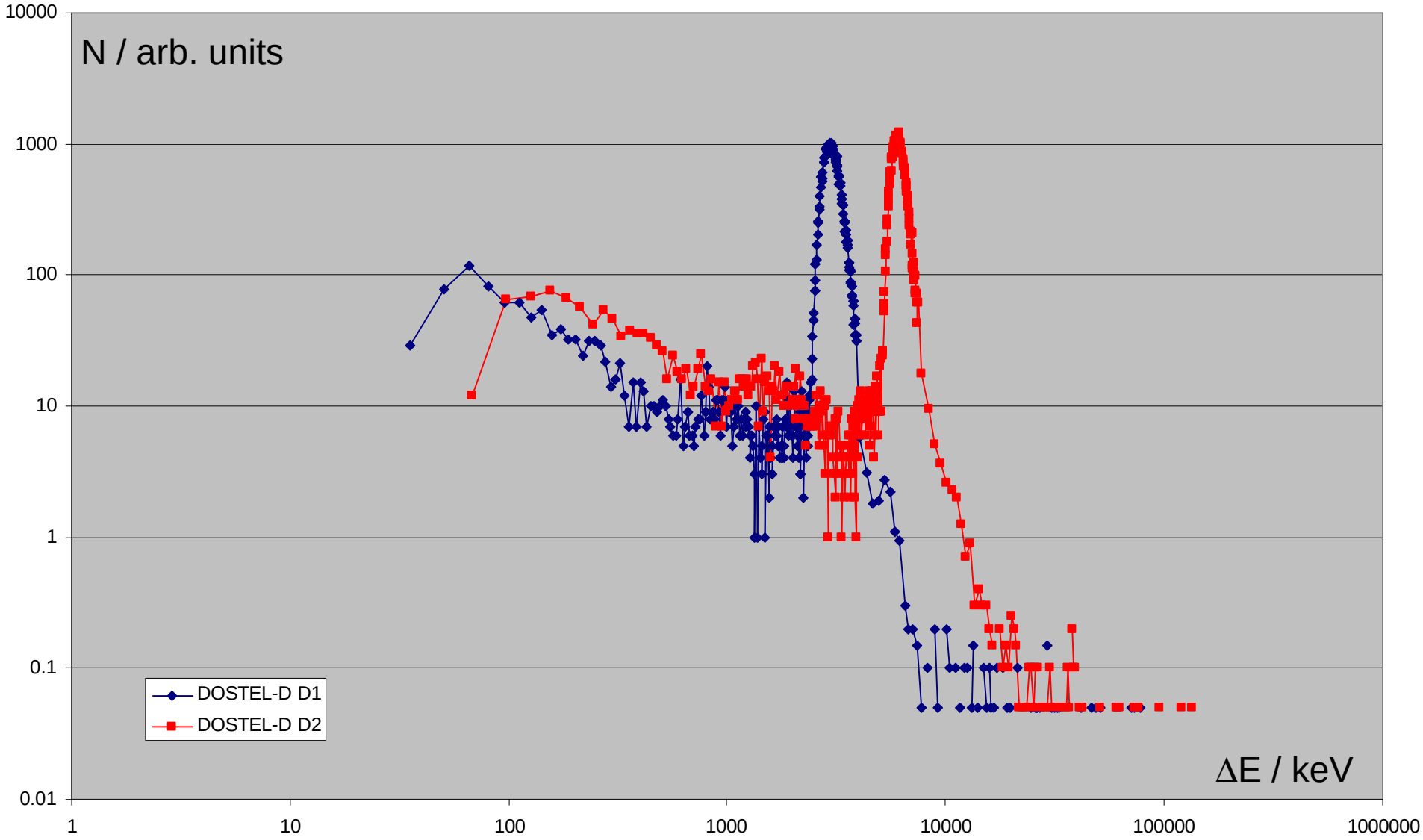
DOSTEL-2 ^{12}C 0° centered



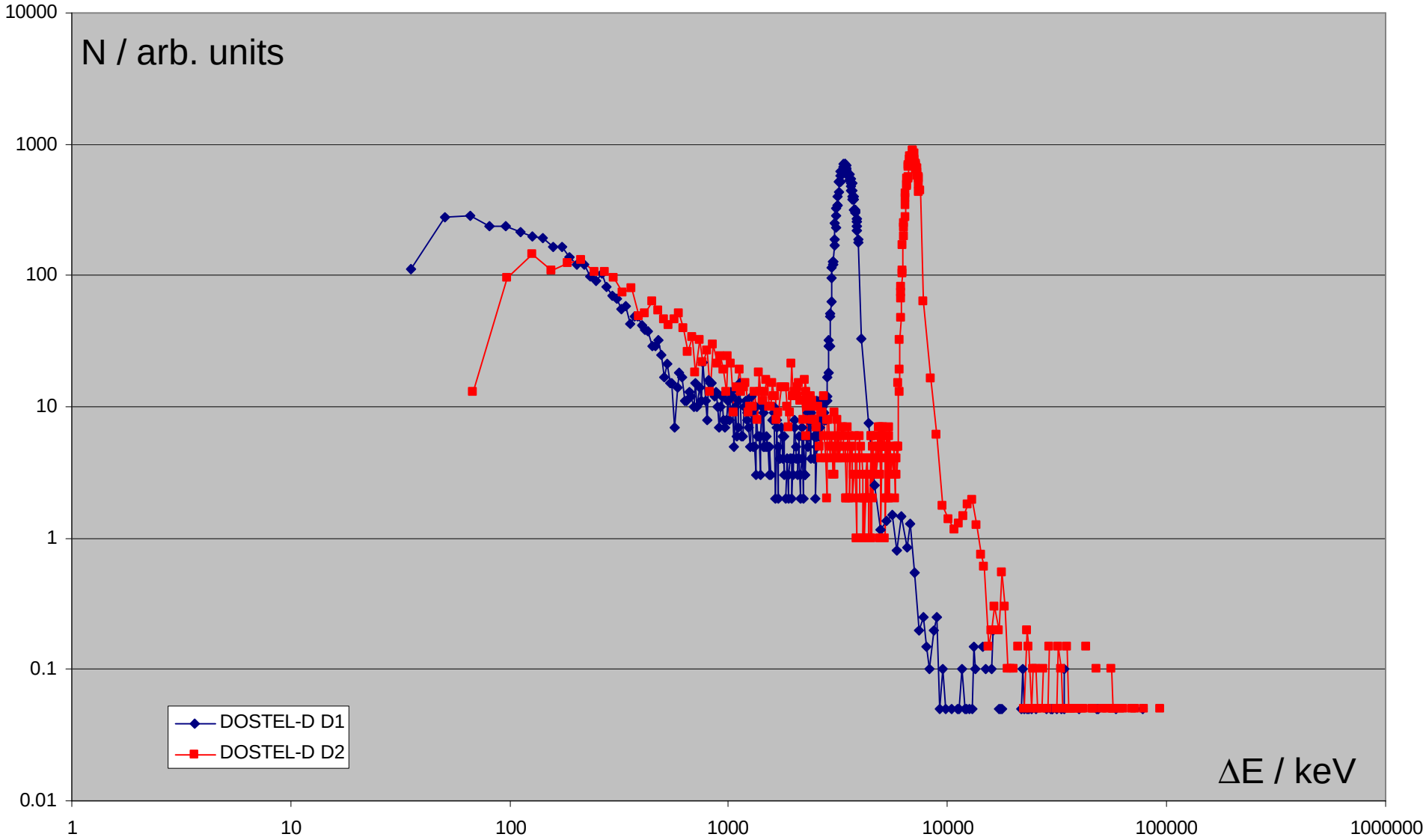
DOSTEL-2 ^{12}C 30° centered



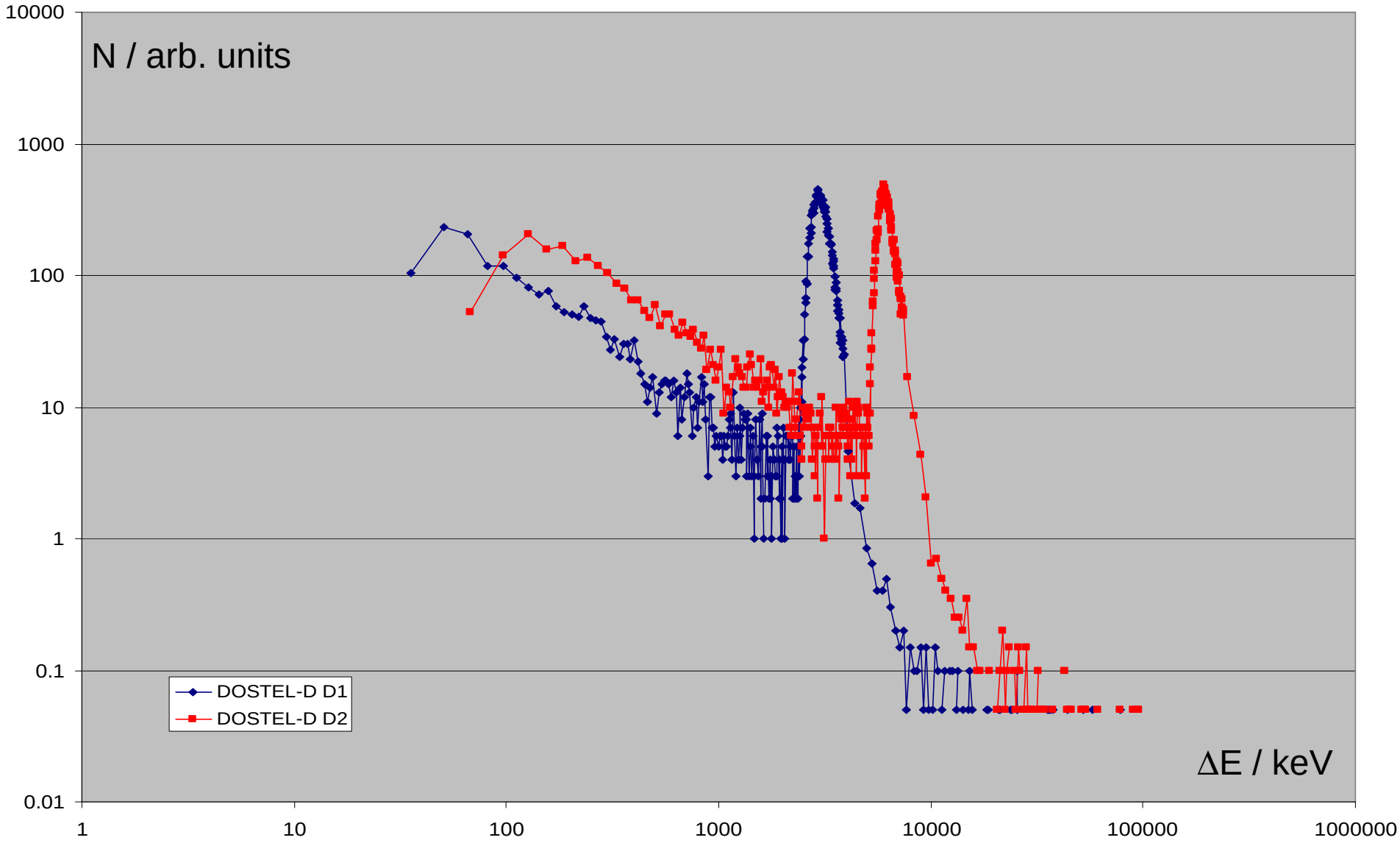
DOSTEL-D ^{12}C 0° centered



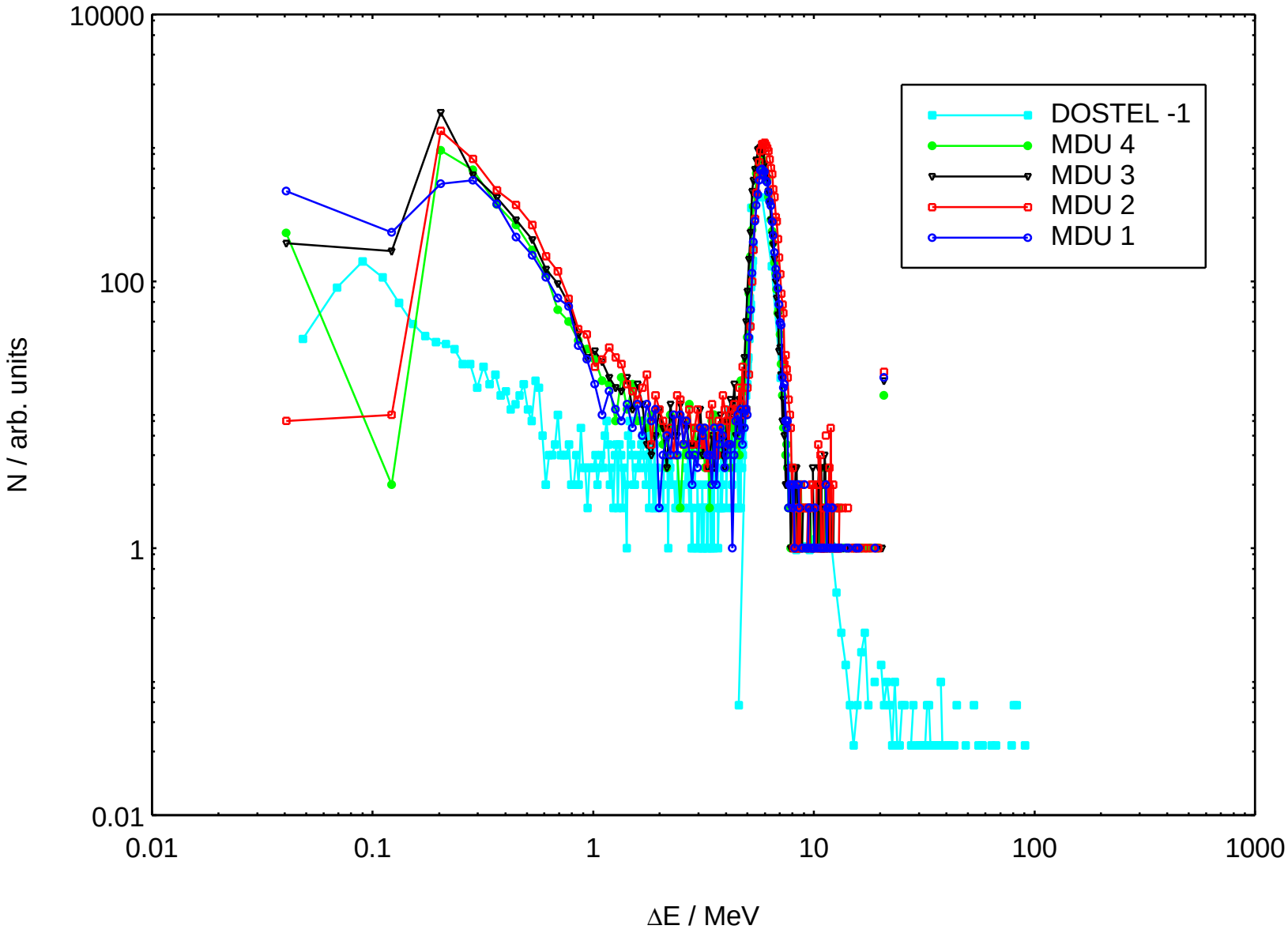
DOSTEL-D ^{12}C 30° centered



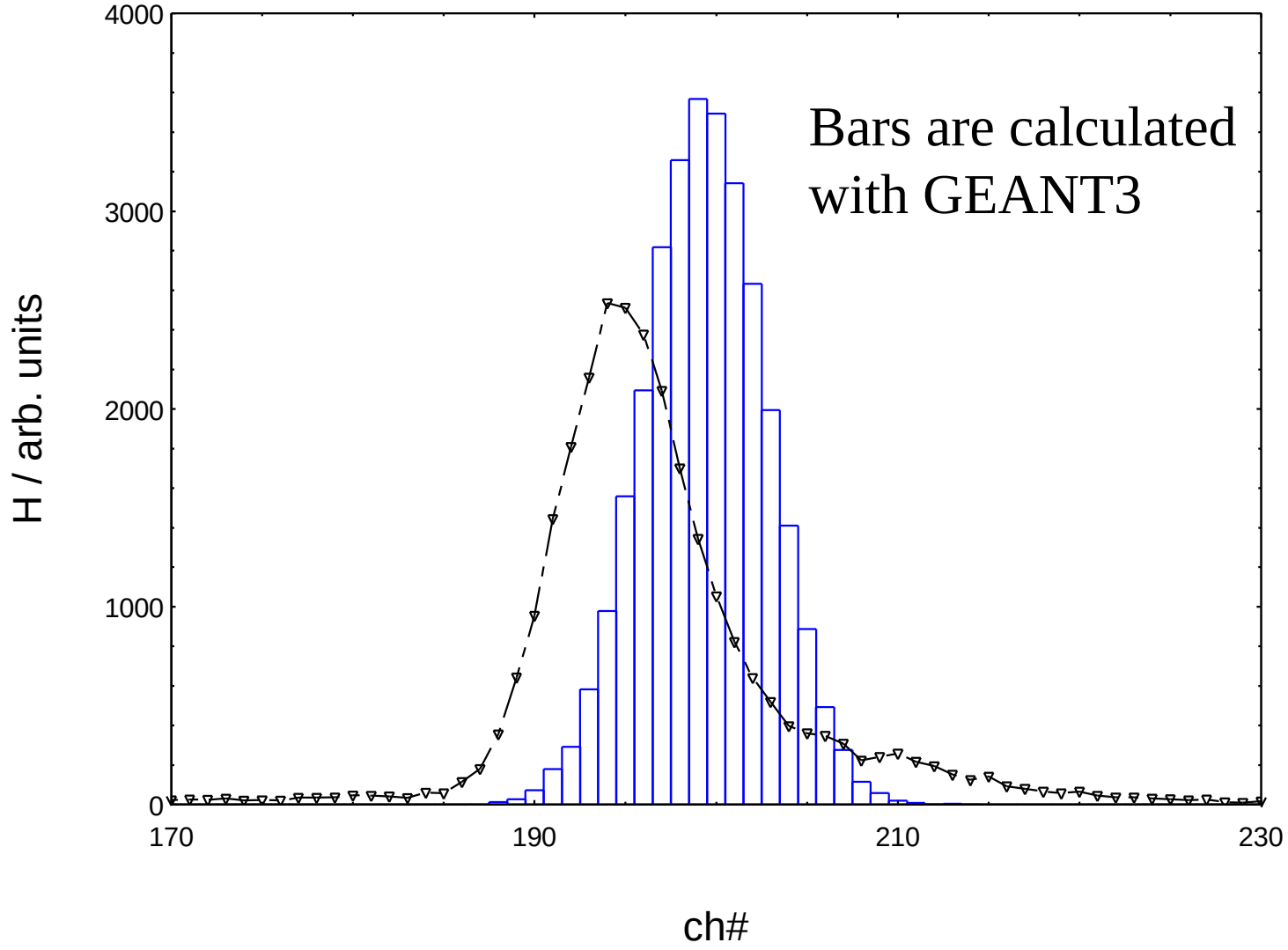
DOSTEL-D ^{12}C 0° X+15mm, Y+15mm



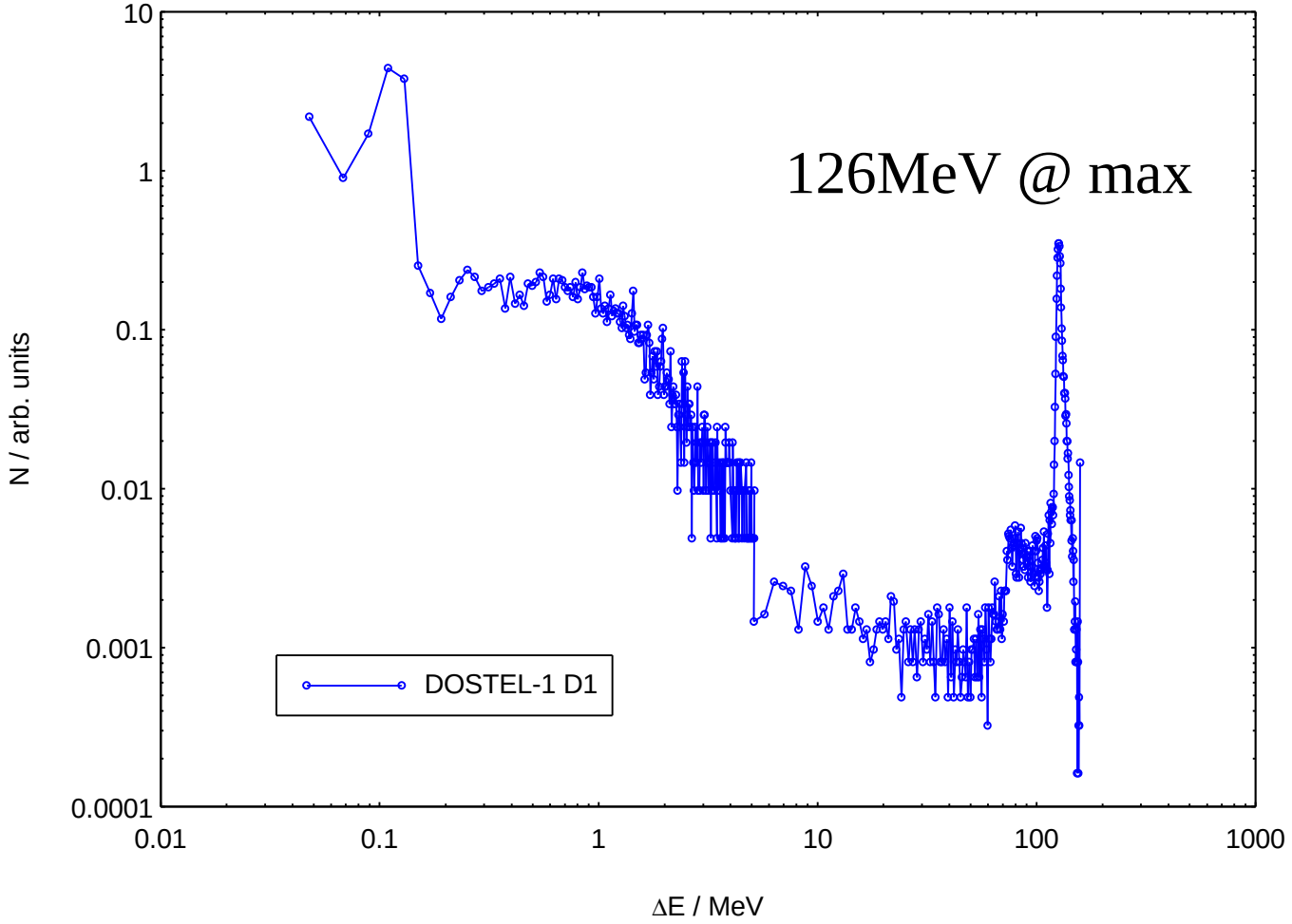
DOSTEL-2 ^{12}C 0° centered



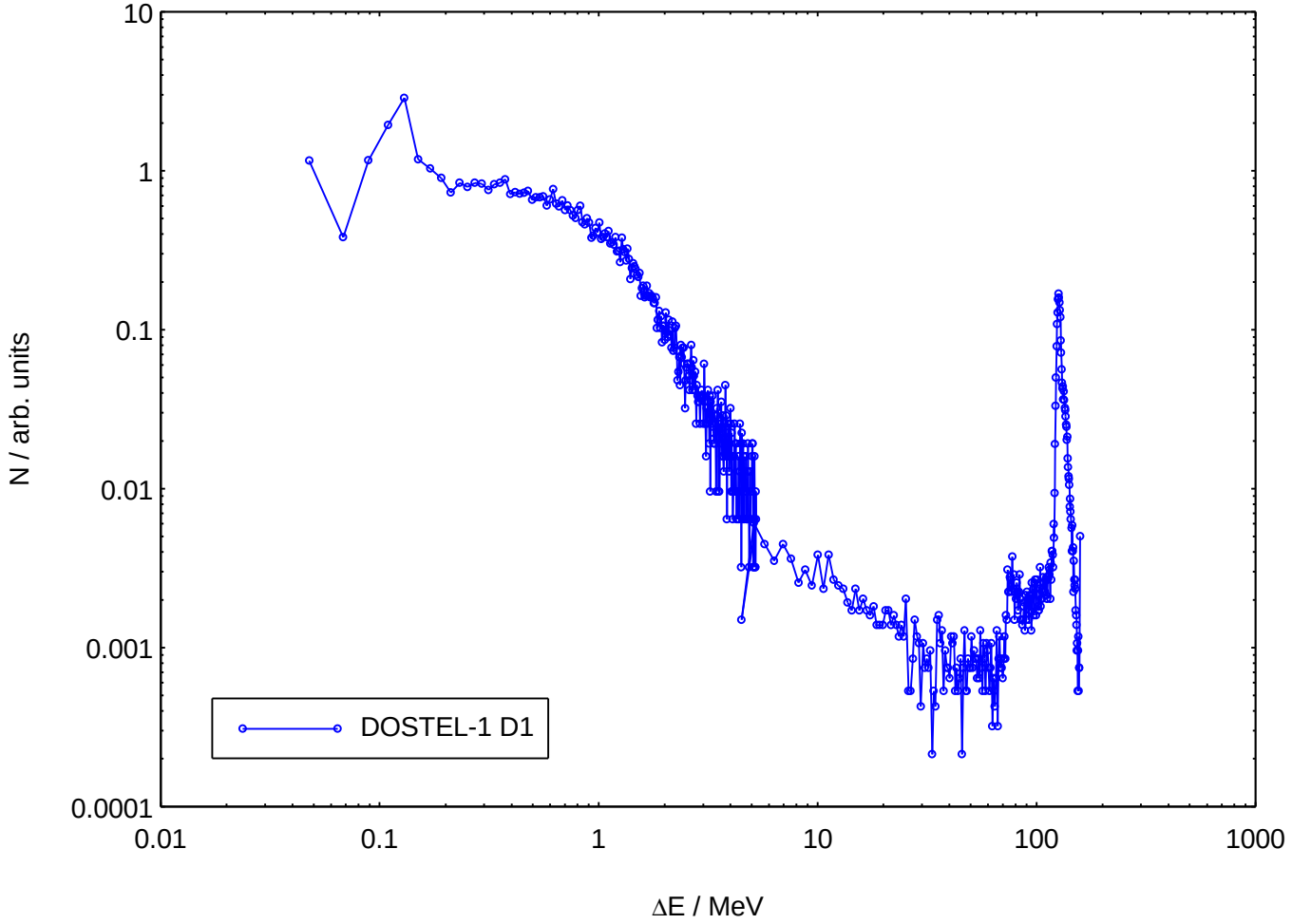
Calculated and Measured Channels for ^{56}Fe



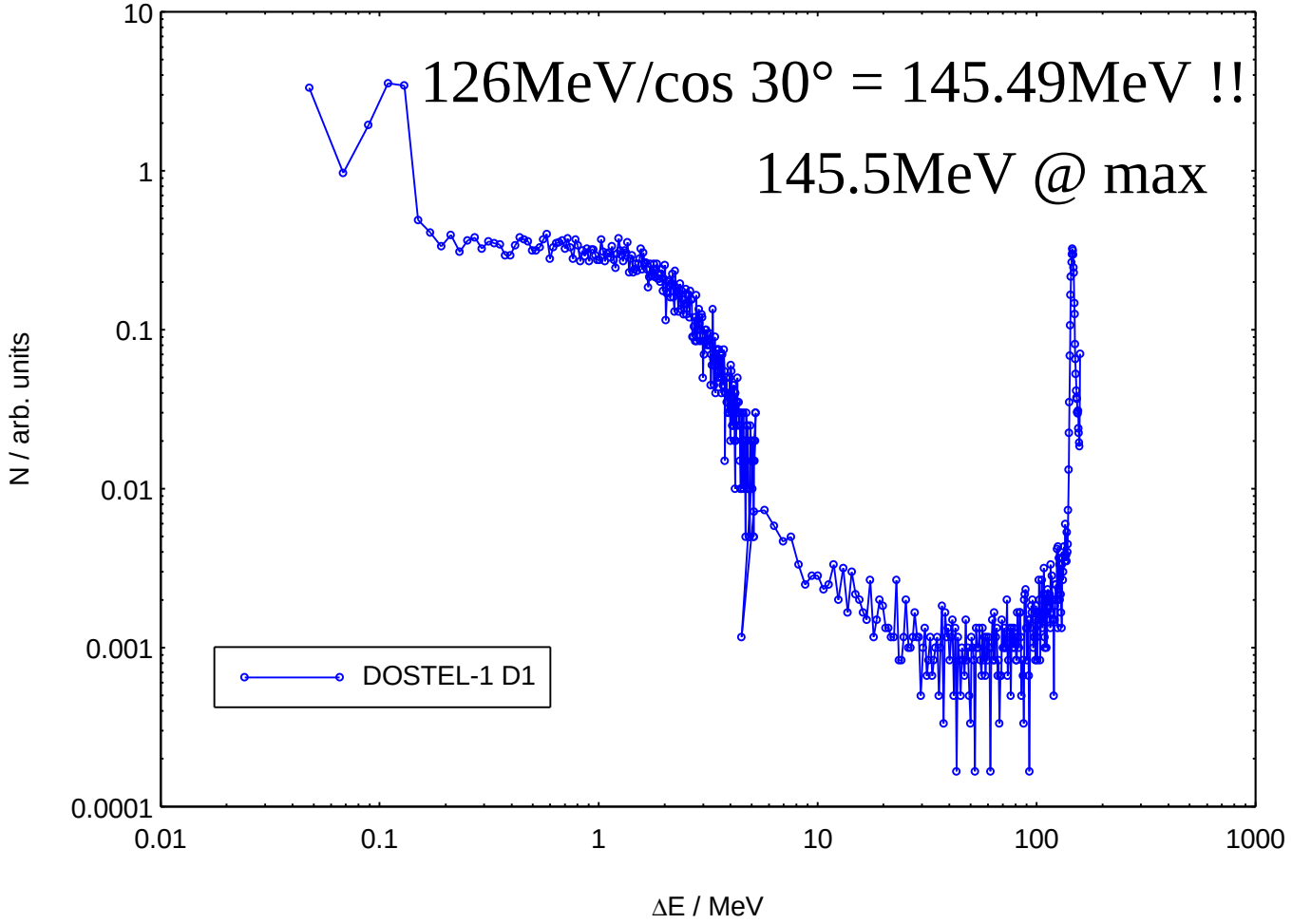
DOSTEL-1 ^{56}Fe 0° centered



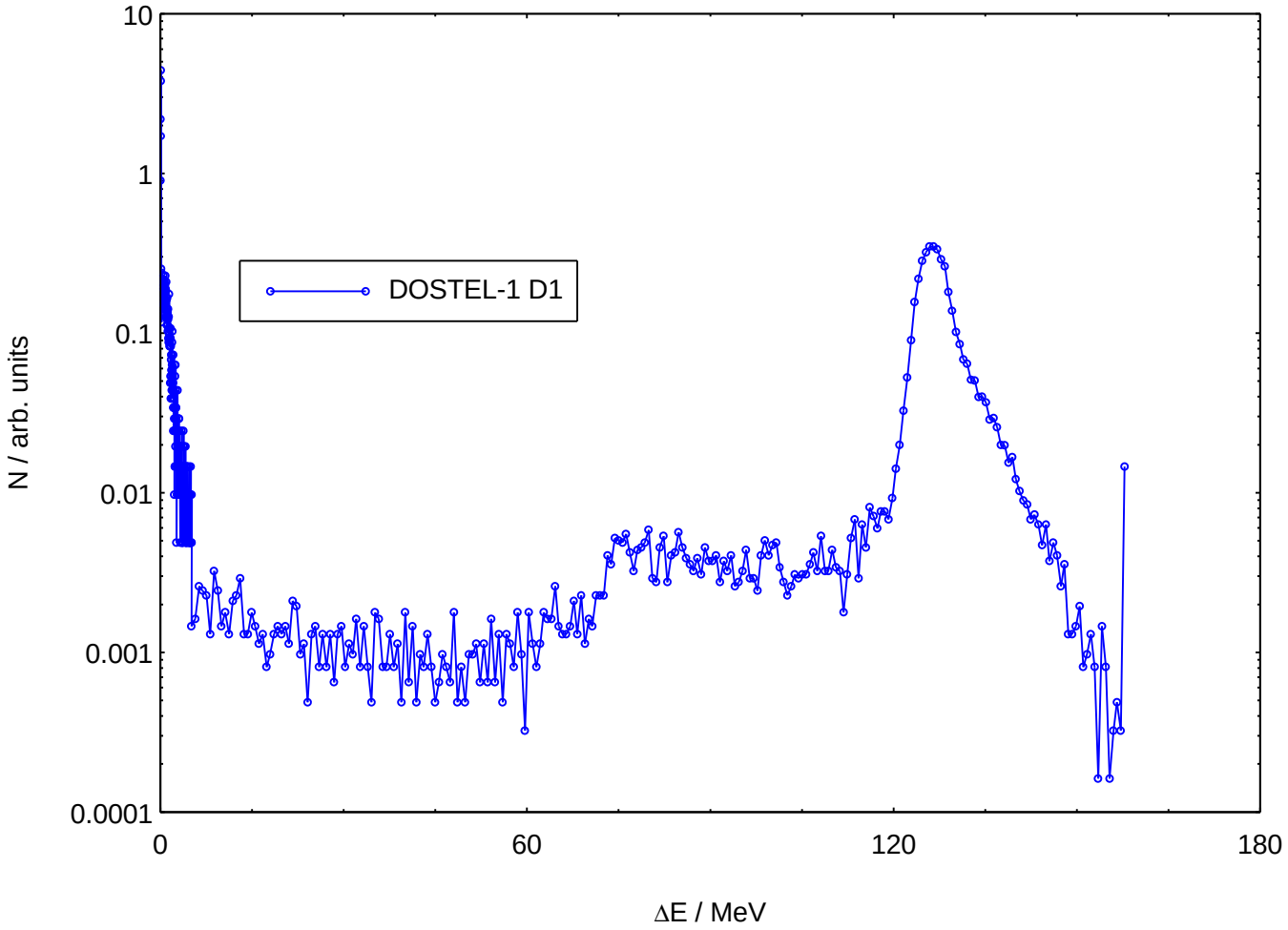
DOSTEL-1 ^{56}Fe 0° X+15mm Y+15mm

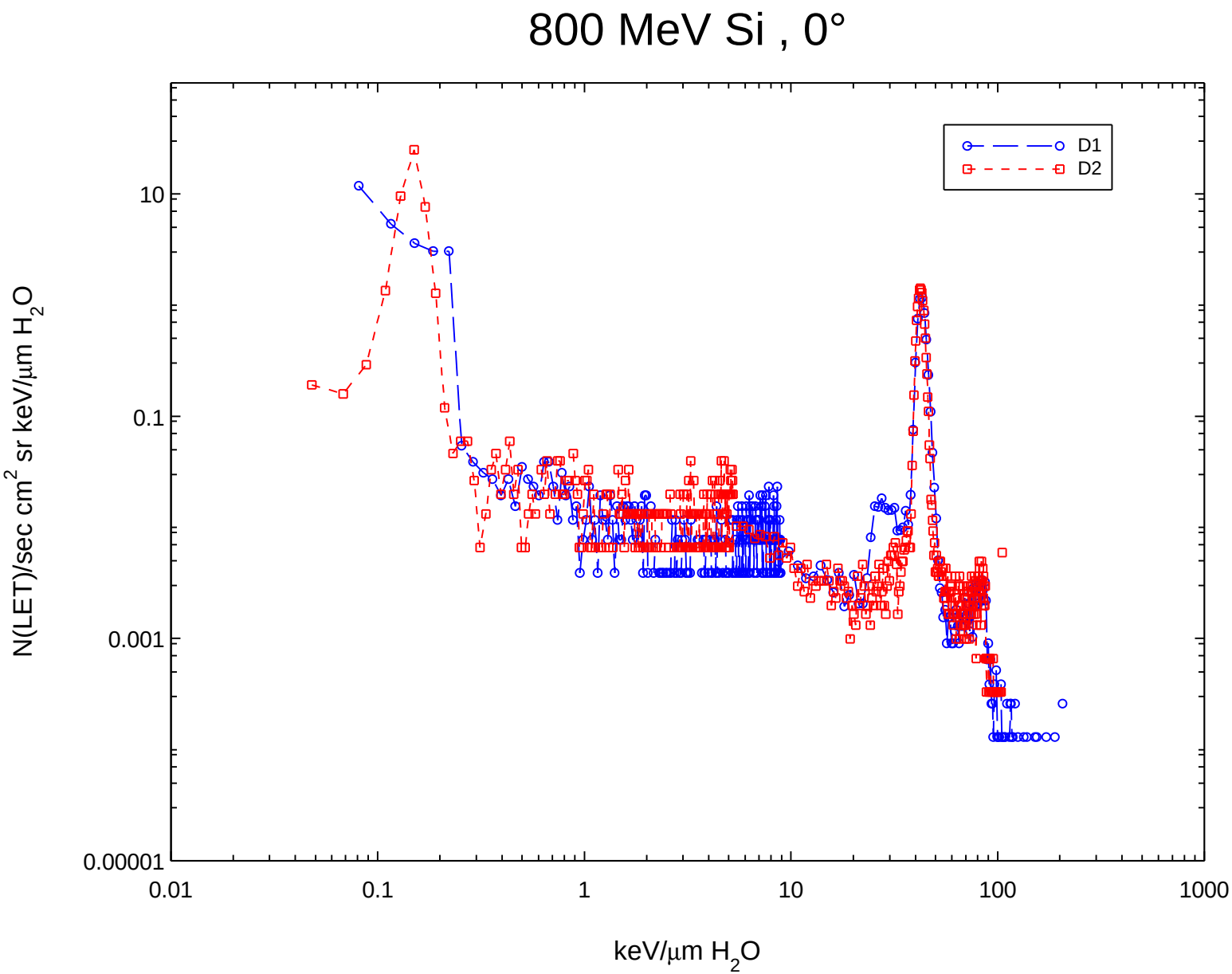


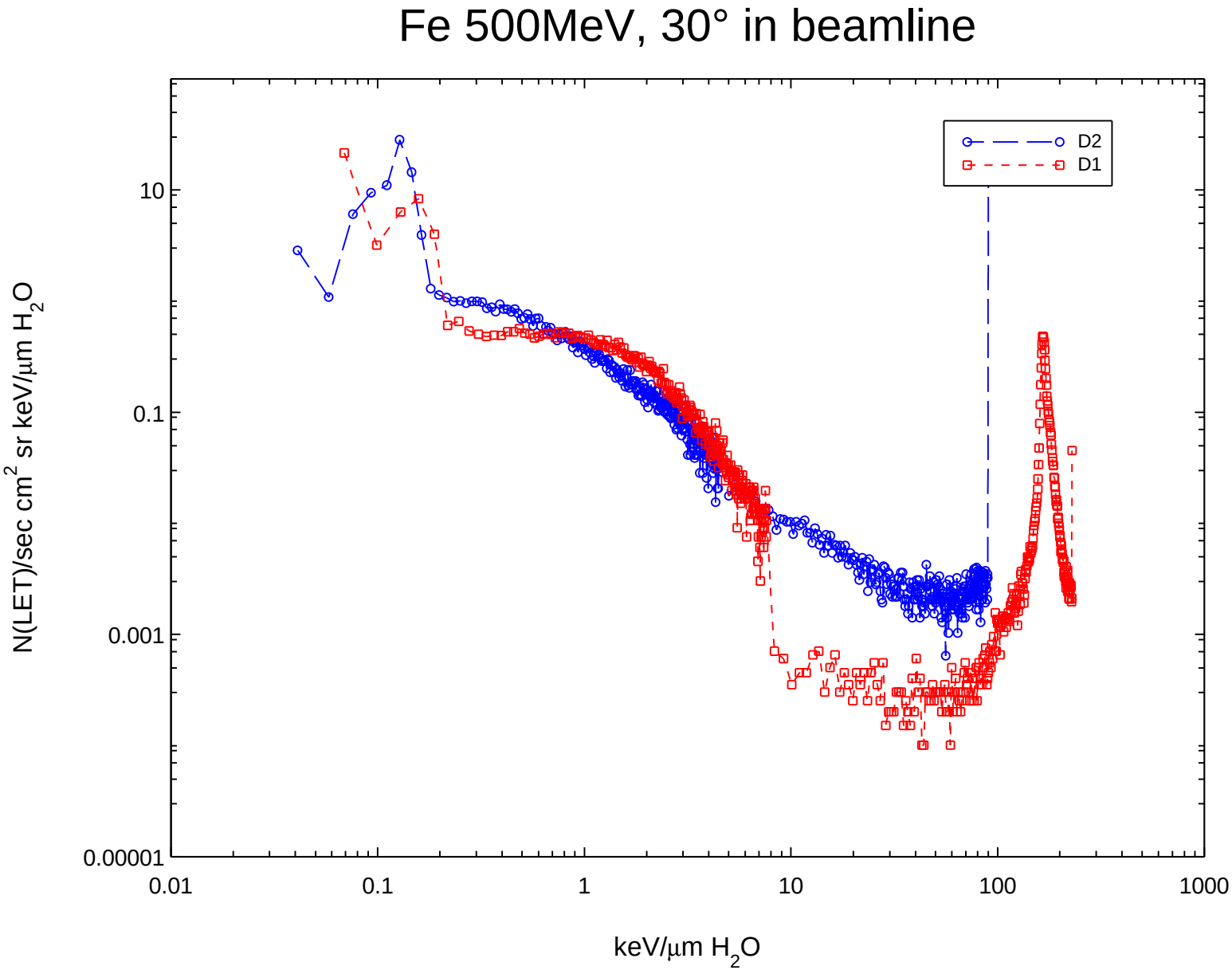
DOSTEL-1 ^{56}Fe 30° centered



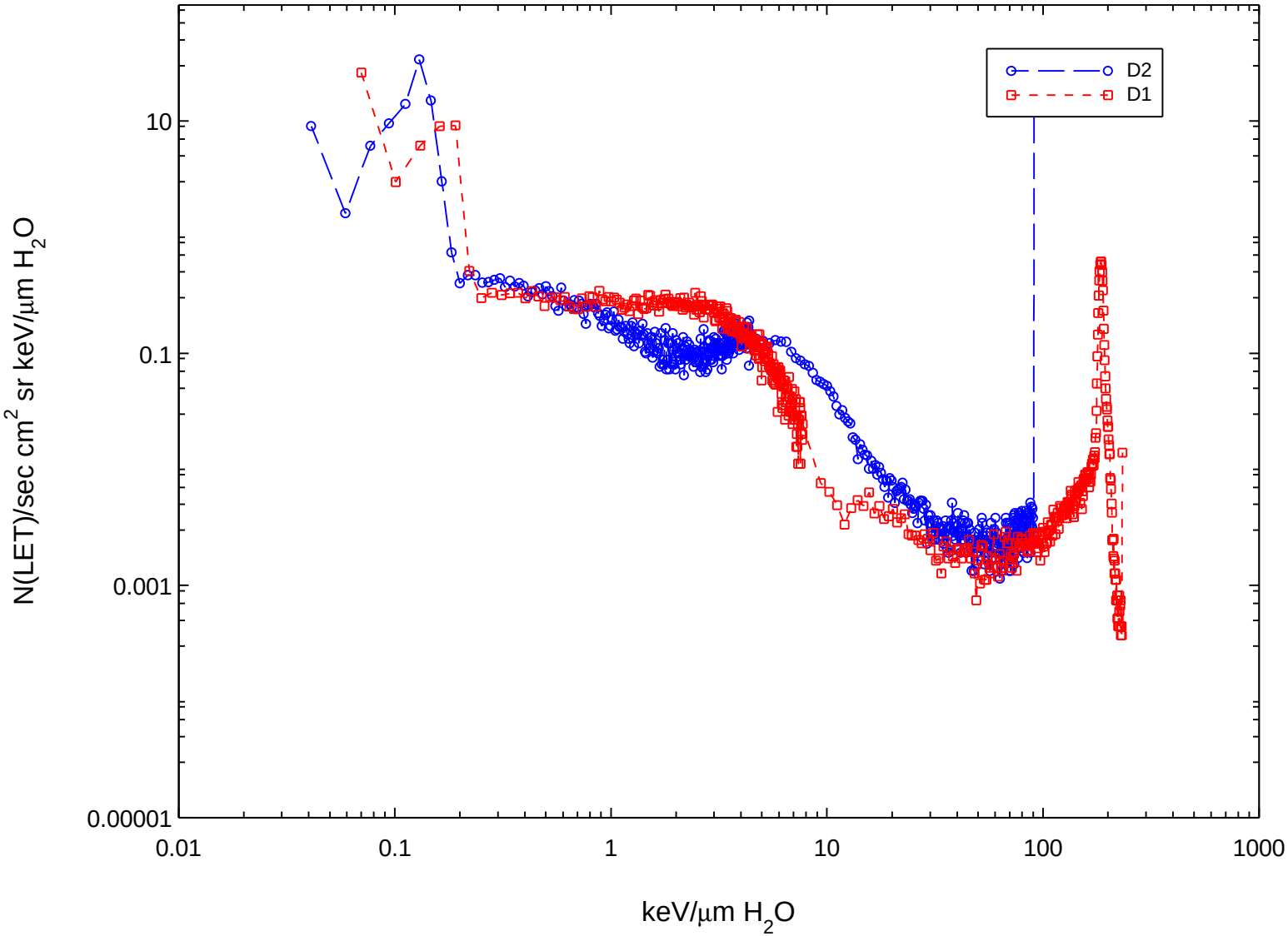
DOSTEL-1 ^{56}Fe 0° centered

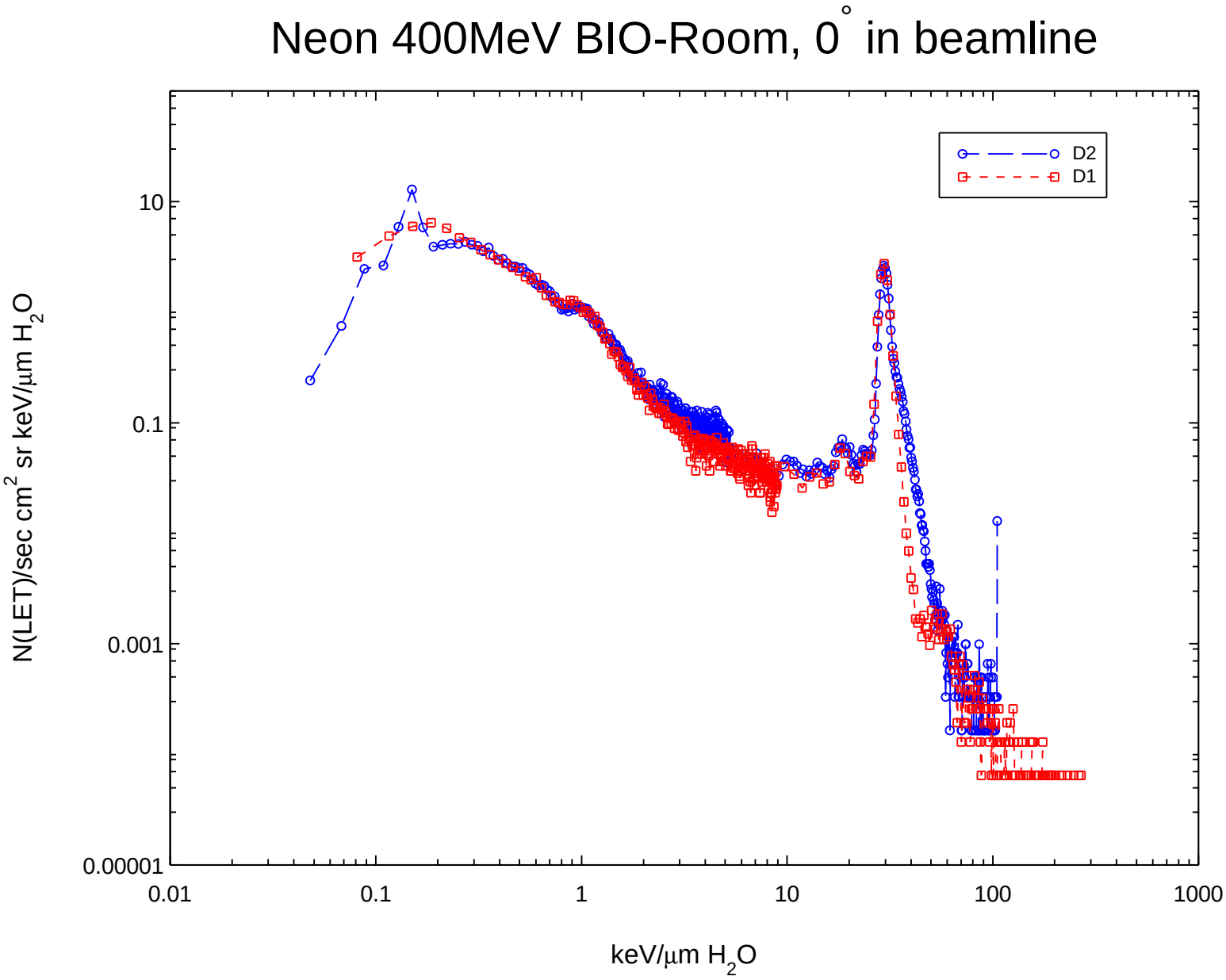


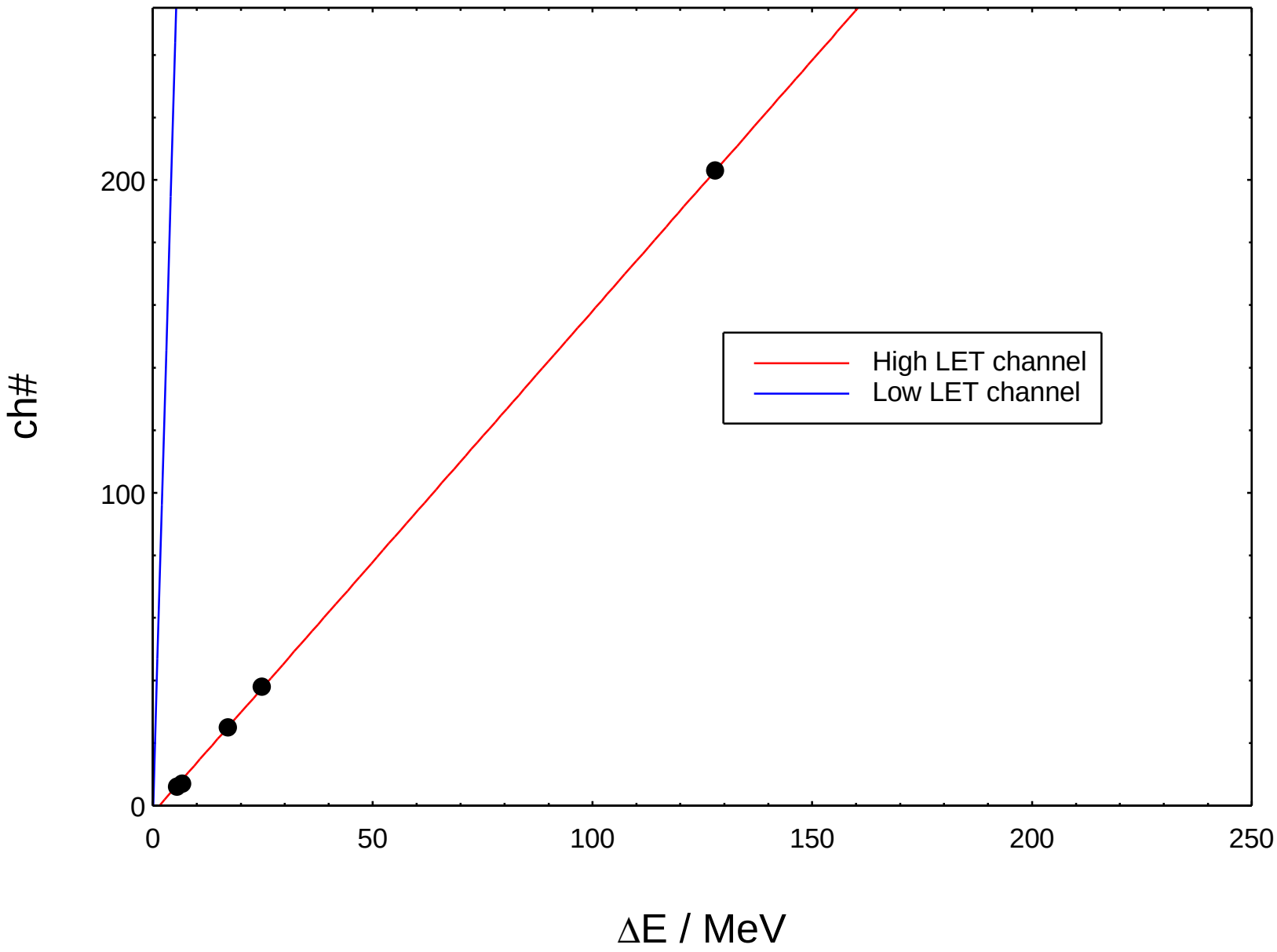

800 MeV Si , 0°
D1
D2
10
0.1
0.001
0.00001
0.01
0.1
1
10
100
1000
N(LET)/sec cm^2 sr keV/µm H_2O
keV/µm H_2O

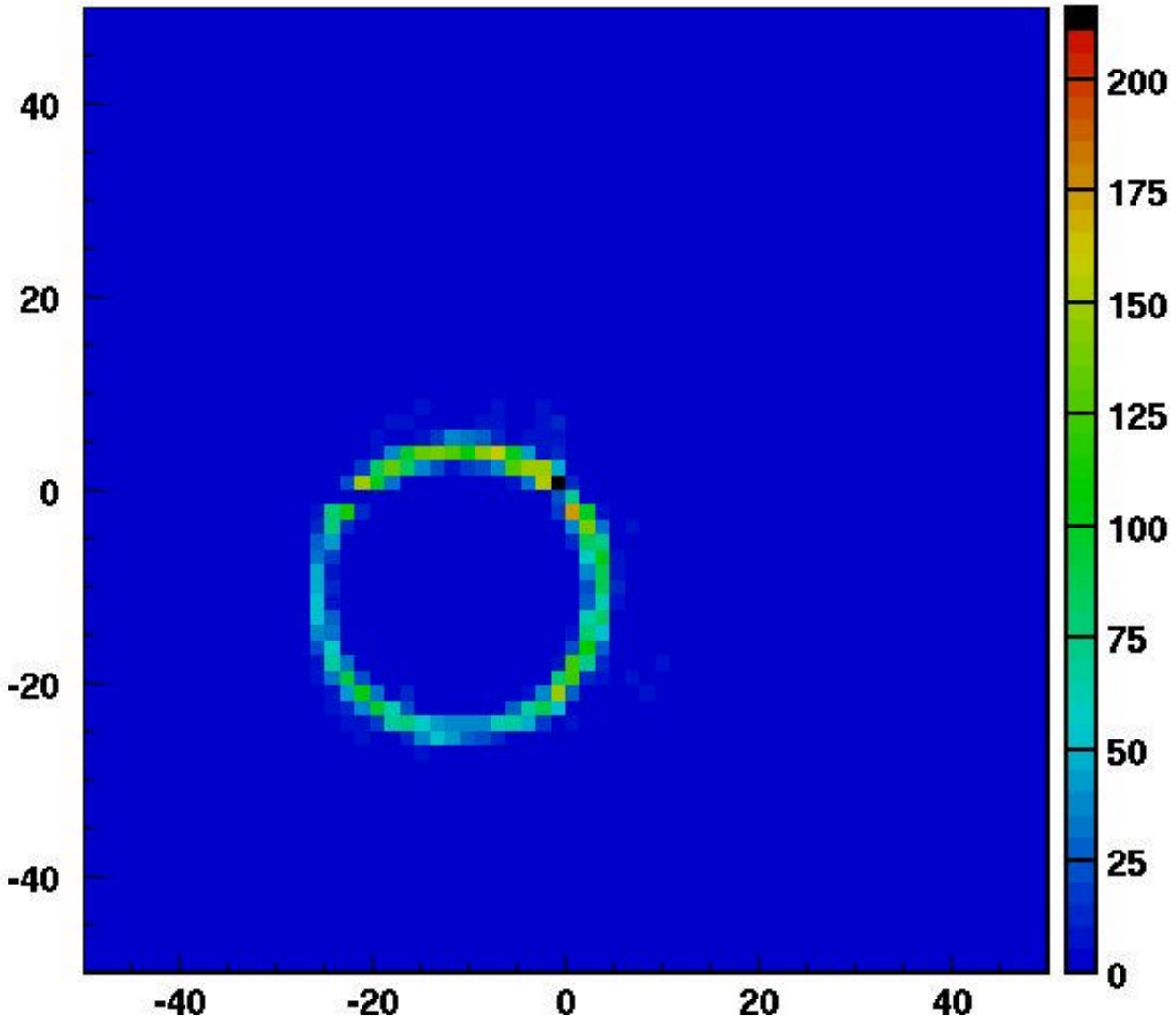

Fe 500MeV, 30° in beamline
D2
D1
N(LET)/sec cm^2 sr keV/μm H_2O
keV/μm H_2O
10
0.1
0.001
0.00001
0.01
0.1
1
10
100
1000

Fe 500MeV, Fragmentation in beam




Neon 400MeV BIO-Room, 0° in beamline
D2
D1
10
0.1
0.001
0.00001
0.01
0.1
1
10
100
1000
N(LET)/sec cm2 sr keV/µm H2O
keV/µm H2O


ch#
200
100
0
0
50
100
150
200
250
ΔE / MeV
High LET channel
Low LET channel


40
20
0
-20
-40
-40
-20
0
20
40
200
175
150
125
100
75
50
25
0