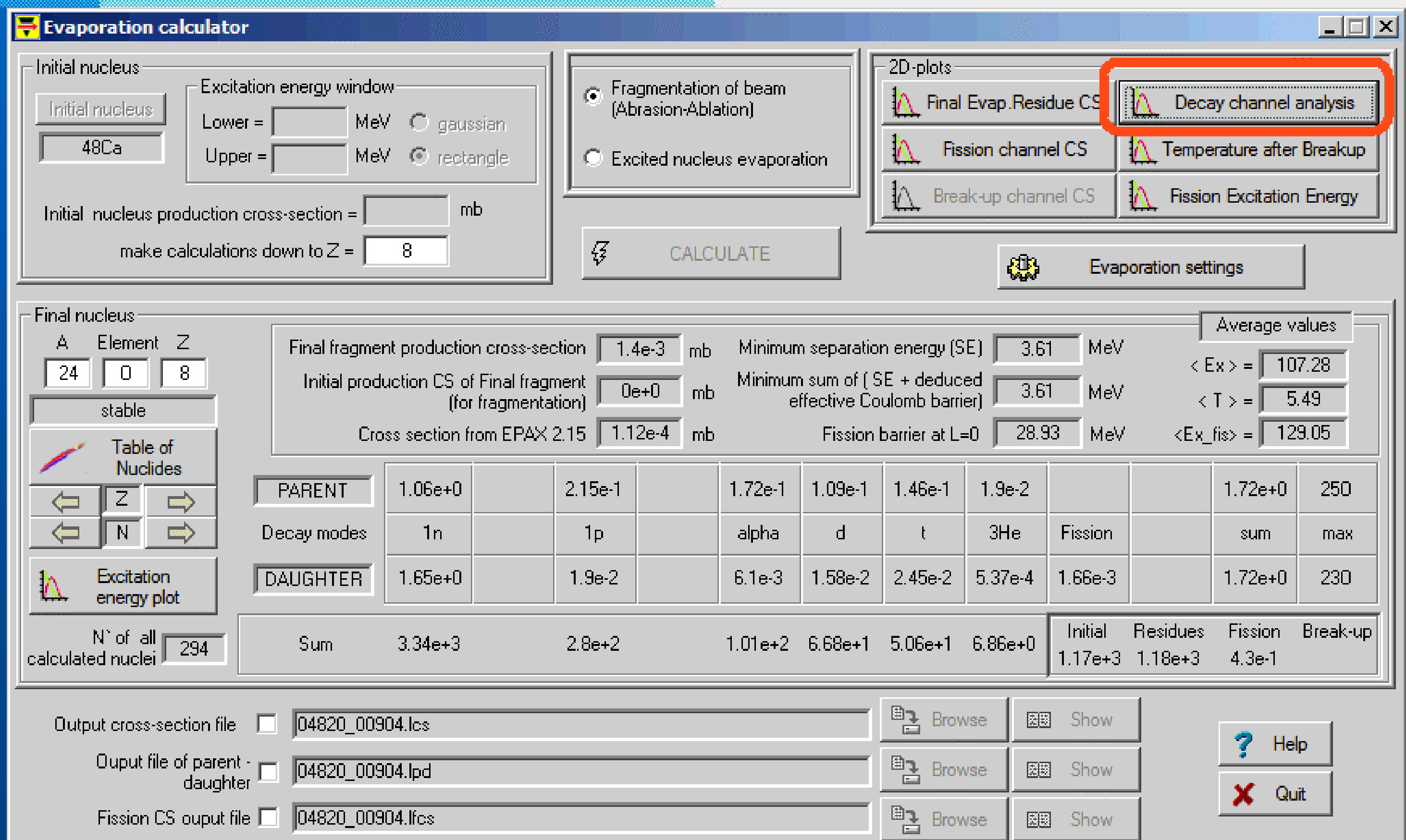
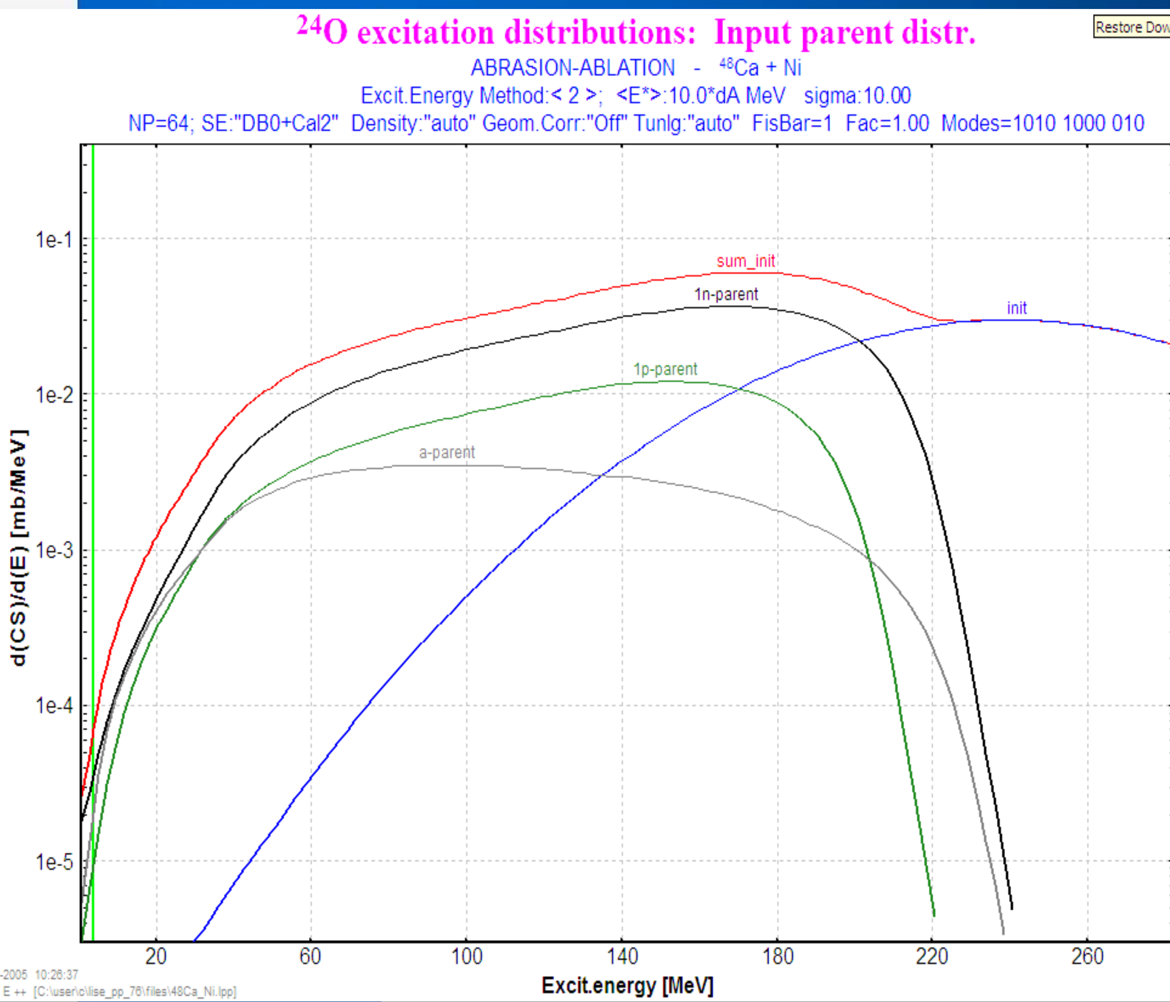
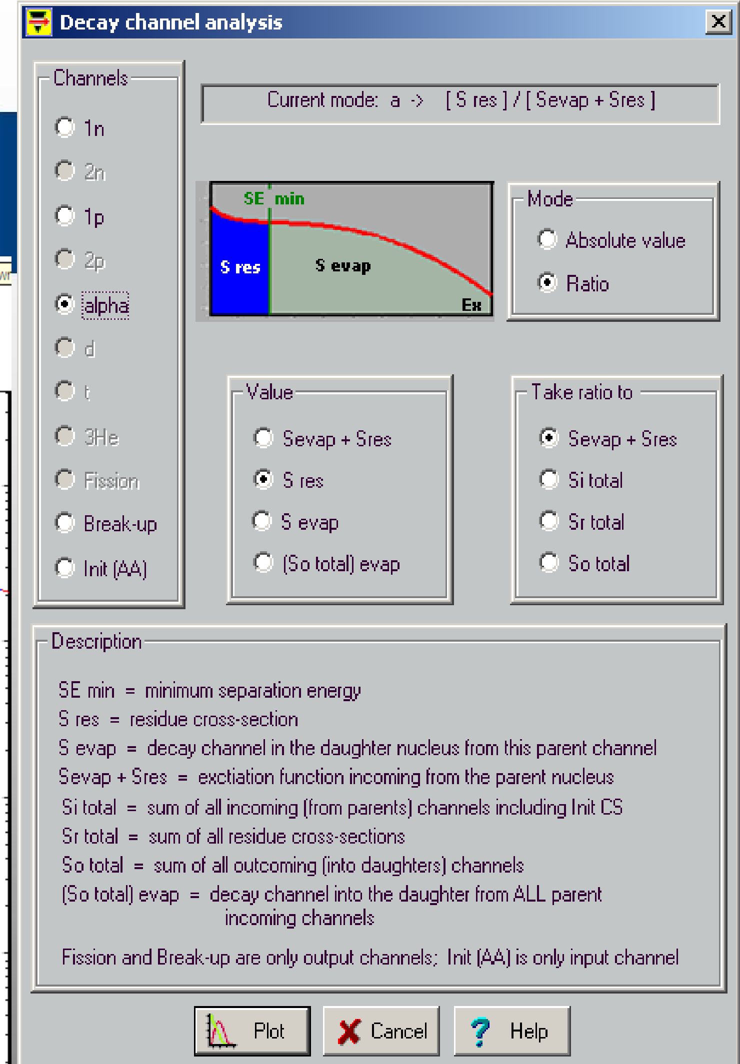
LISE++

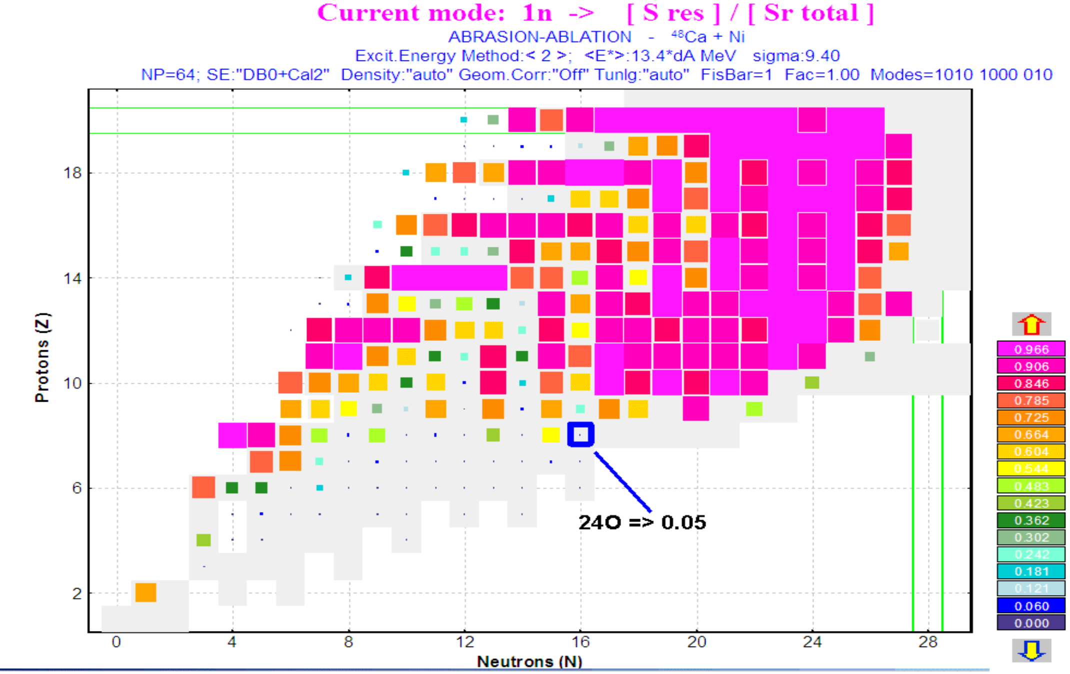
Decay channel analysis



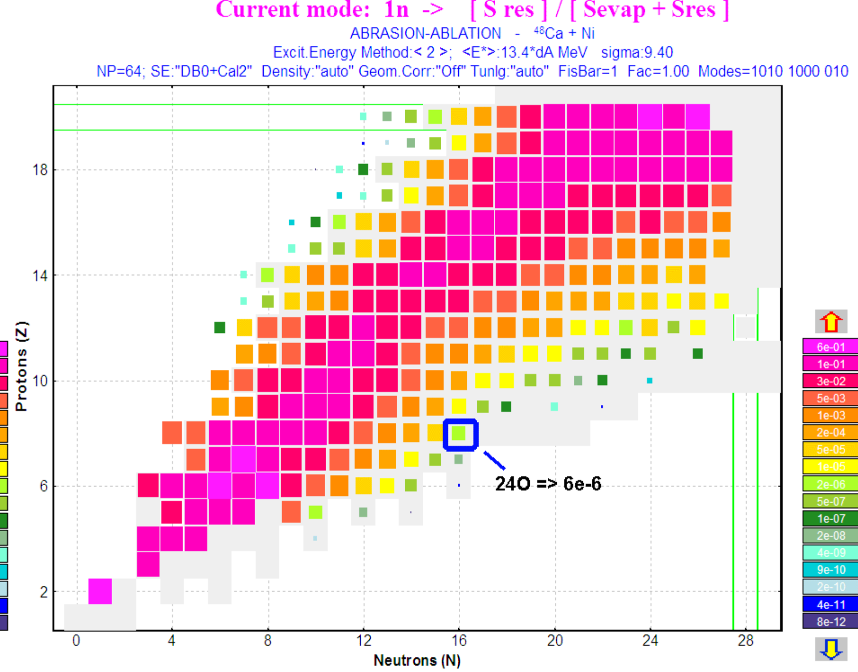
Decay channel analysis



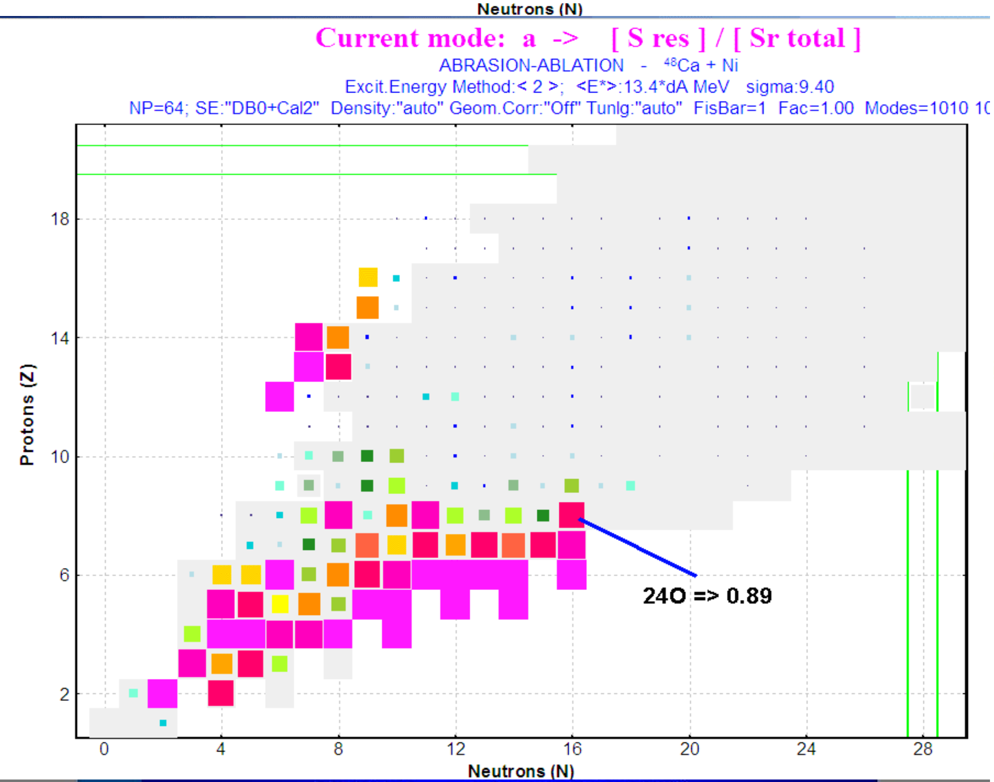




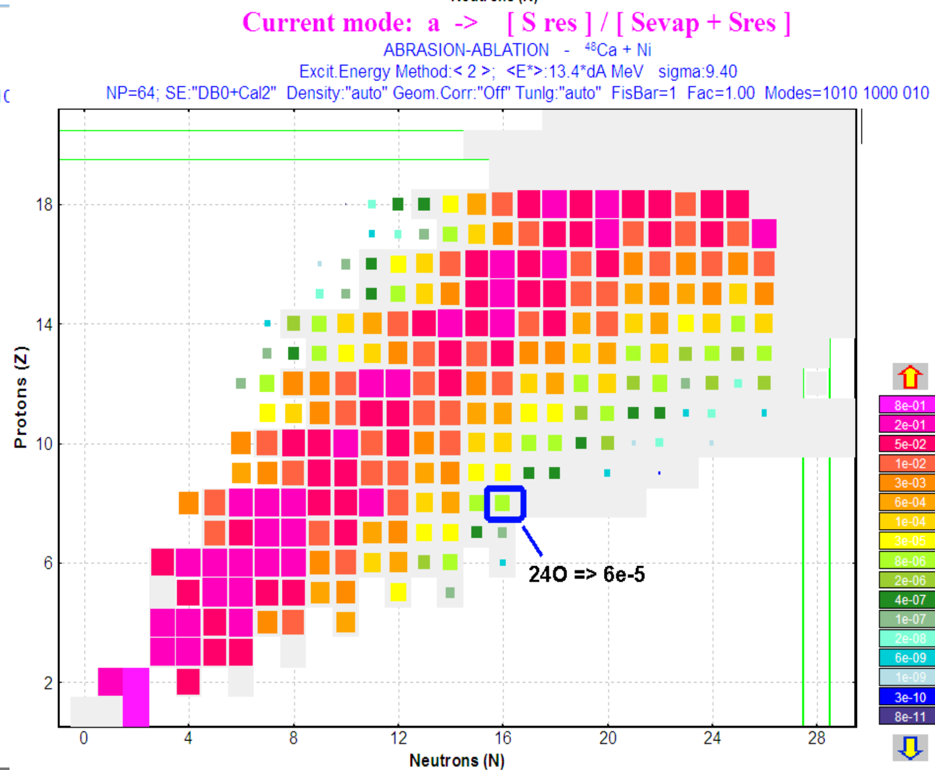
Current mode: 1n -> [S res] / [Sr total]
ABRASION-ABLATION - 48Ca + Ni
Excit.Energy Method:< 2 >; <E*>:13.4*dA MeV sigma:9.40
NP=64; SE:"DB0+Cal2" Density:"auto" Geom.Corr:"Off" Tunlg:"auto" FisBar=1 Fac=1.00 Modes=1010 1000 010
Protons (Z)
Neutrons (N)
24O => 0.05
0.966
0.906
0.846
0.785
0.725
0.664
0.604
0.544
0.483
0.423
0.362
0.302
0.242
0.181
0.121
0.060
0.000



Current mode: 1n -> [S res] / [Sevap + Sres]
ABRASION-ABLATION - 48Ca + Ni
Excit.Energy Method:< 2 >; <E*>:13.4*dA MeV sigma:9.40
NP=64; SE:"DB0+Cal2" Density:"auto" Geom.Corr:"Off" Tunlg:"auto" FisBar=1 Fac=1.00 Modes=1010 1000 010
Protons (Z)
Neutrons (N)
24O => 6e-6
6e-01
1e-01
3e-02
5e-03
1e-03
2e-04
5e-05
1e-05
2e-06
5e-07
1e-07
2e-08
4e-09
9e-10
2e-10
4e-11
8e-12

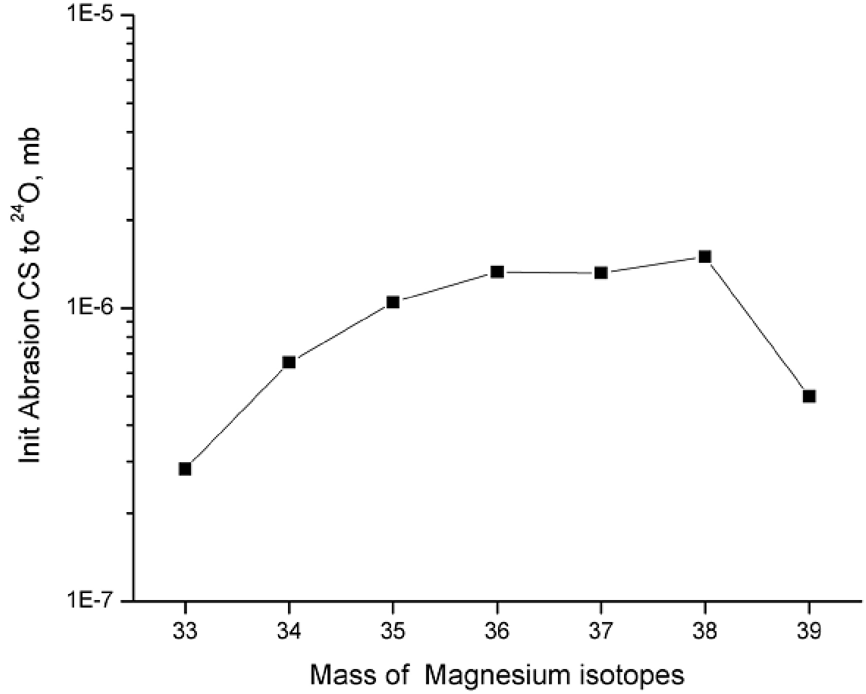


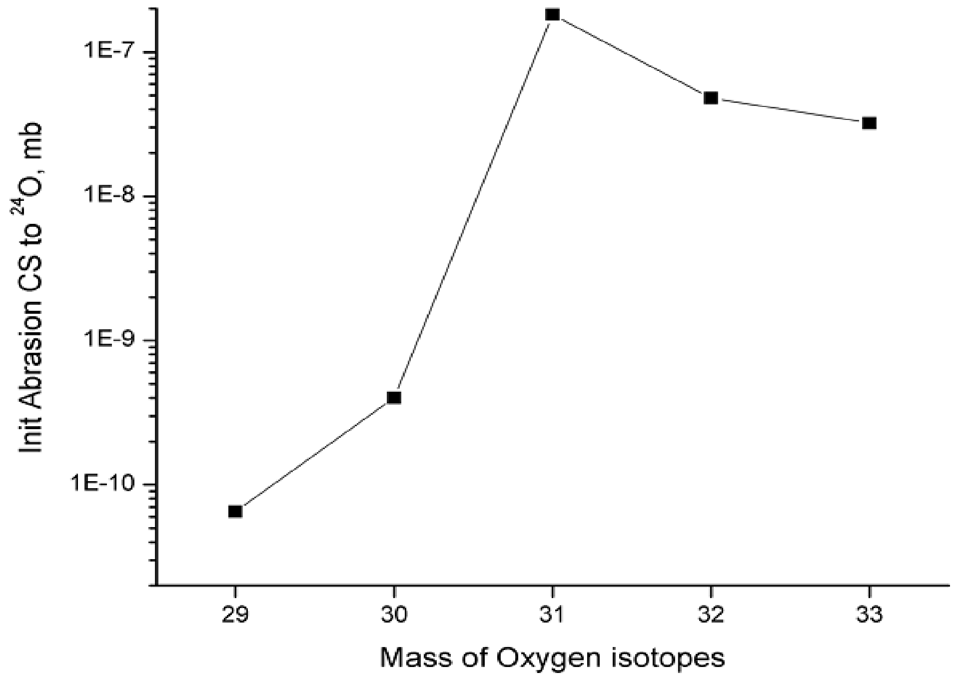
Current mode: a -> [S res] / [Sr total]
ABRASION-ABLATION - 48Ca + Ni
Excit.Energy Method:< 2 >; <E*>:13.4*dA MeV sigma:9.40
NP=64; SE:"DB0+Cal2" Density:"auto" Geom.Corr:"Off" Tunlg:"auto" FisBar=1 Fac=1.00 Modes=1010 1
Protons (Z)
Neutrons (N)
24O => 0.89

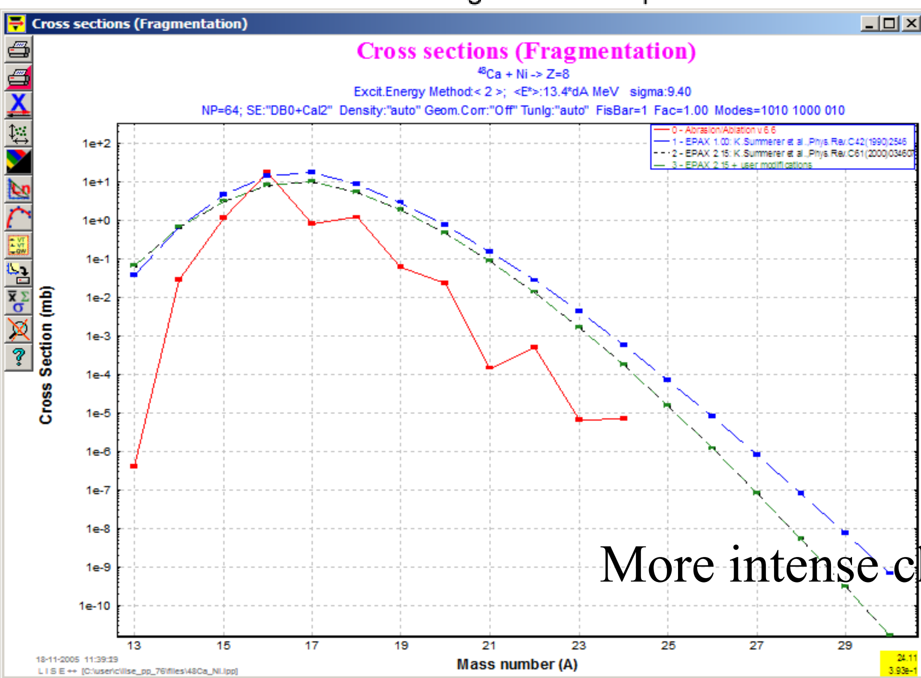


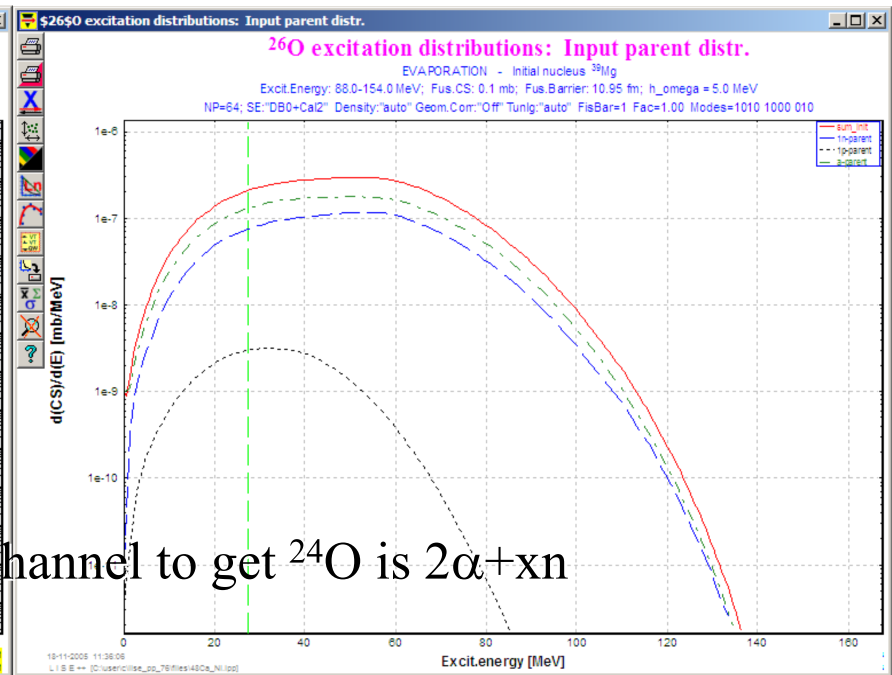
Current mode: a -> [S res] / [Sevap + Sres]
ABRASION-ABLATION - 48Ca + Ni
Excit.Energy Method:< 2 >; <E*>:13.4*dA MeV sigma:9.40
NP=64; SE:"DB0+Cal2" Density:"auto" Geom.Corr:"Off" Tunlg:"auto" FisBar=1 Fac=1.00 Modes=1010 1000 010
Protons (Z)
Neutrons (N)
24O => 6e-5
8e-01
2e-01
5e-02
1e-02
3e-03
6e-04
1e-04
3e-05
8e-06
2e-06
4e-07
1e-07
2e-08
6e-09
1e-09
3e-10
8e-11

$^{48}Ca+Ni \rightarrow ^{24}O$



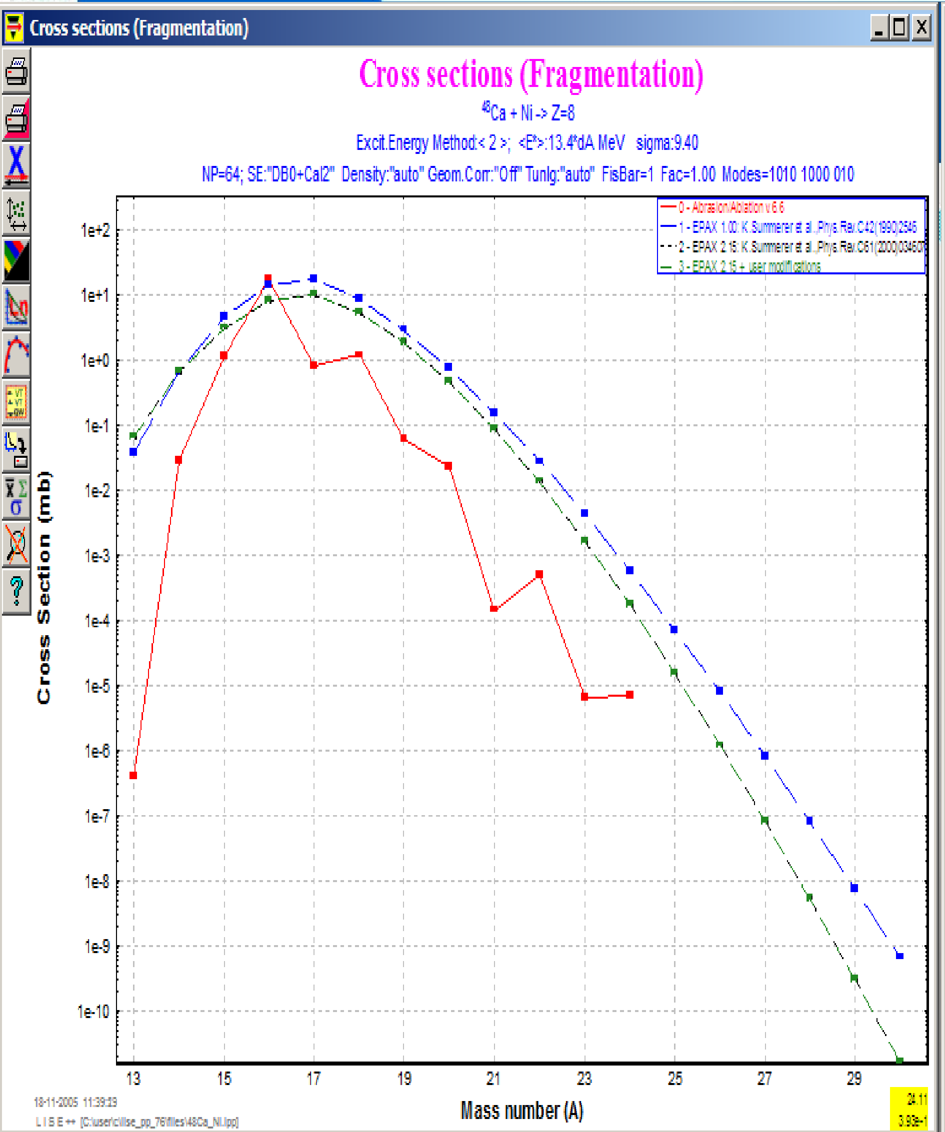


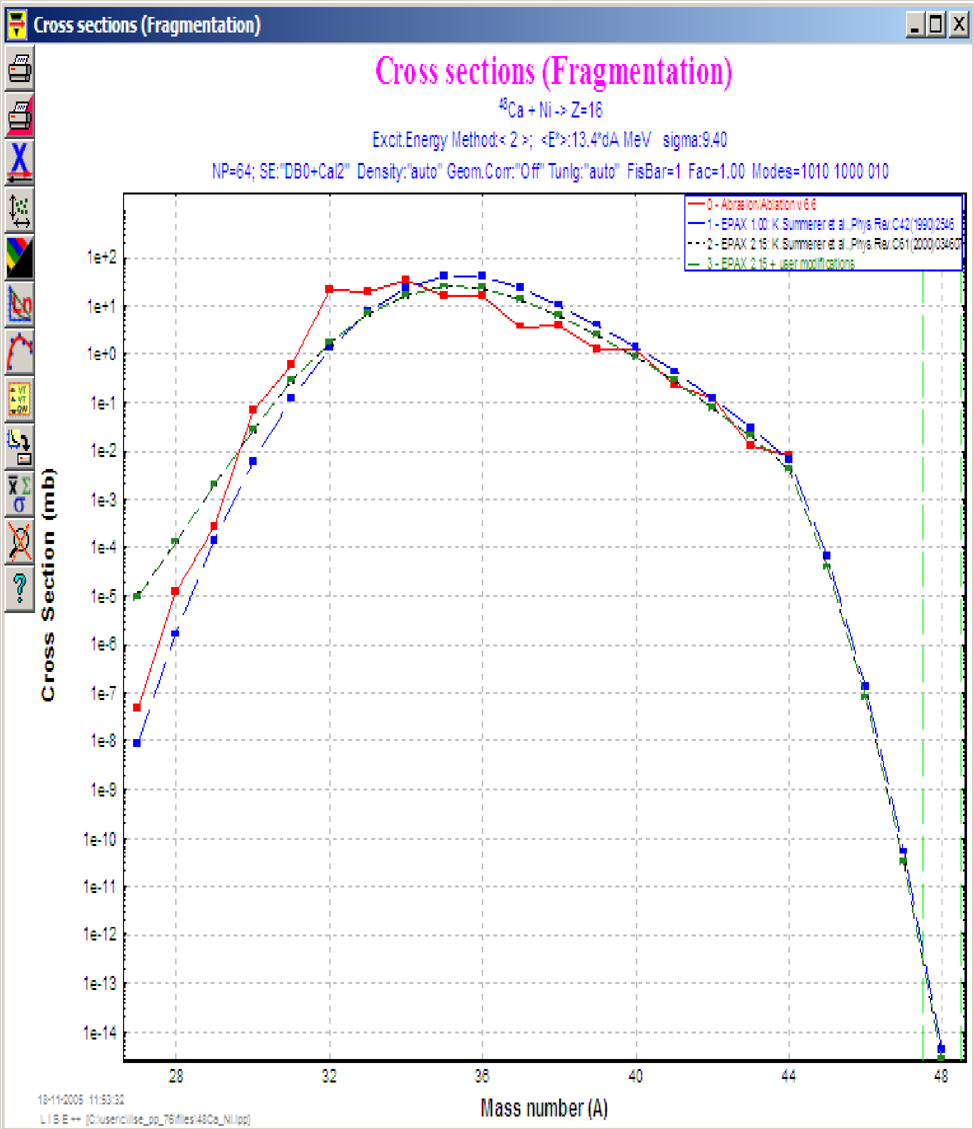




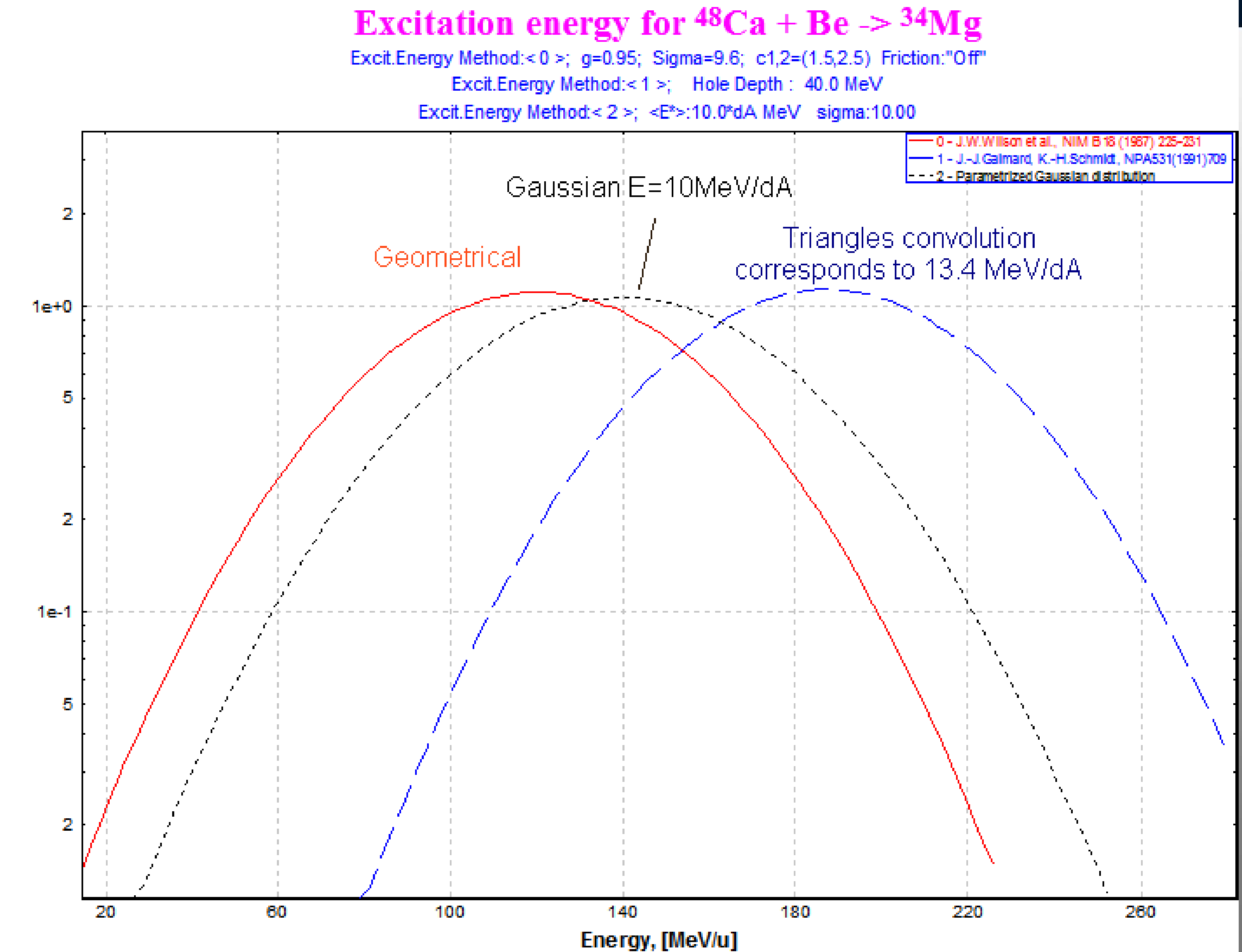
More intense channel to get ^{24}O is 2α+xn

$^{48}Ca+Ni \rightarrow Z=8$ (left) and $Z=16$ (right)





Excitation energy (method 3): Ex =const(dA) sig(Ex)=const(dA)



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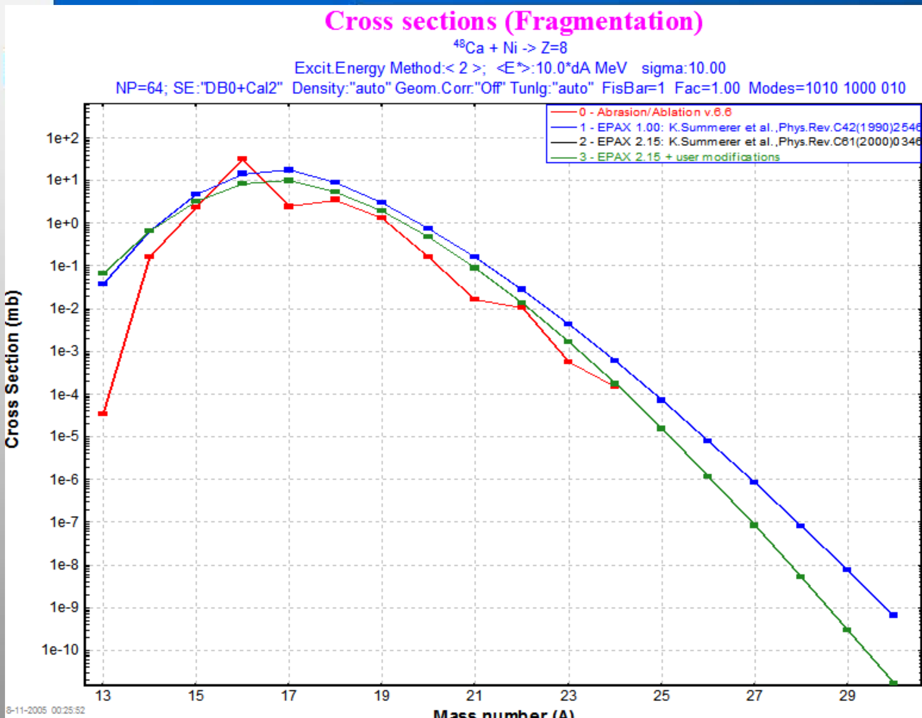
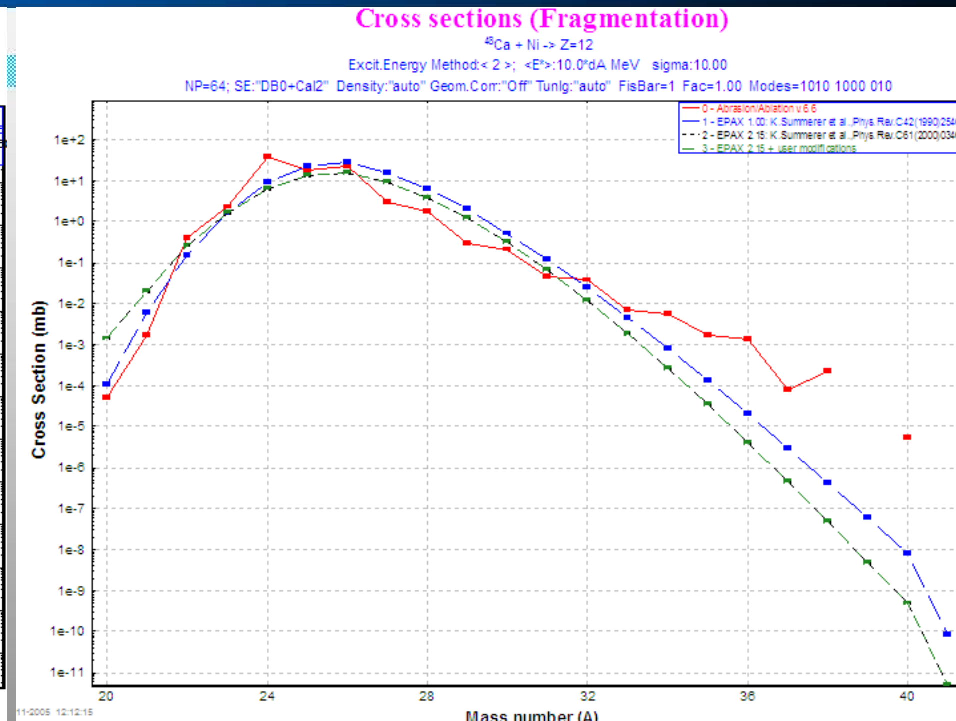
^{48}Ca+Ni -→ Z=8 (left) and Z=12 (right)

Ex=10MeV/dA, sig(Ex) =10MeV/dA

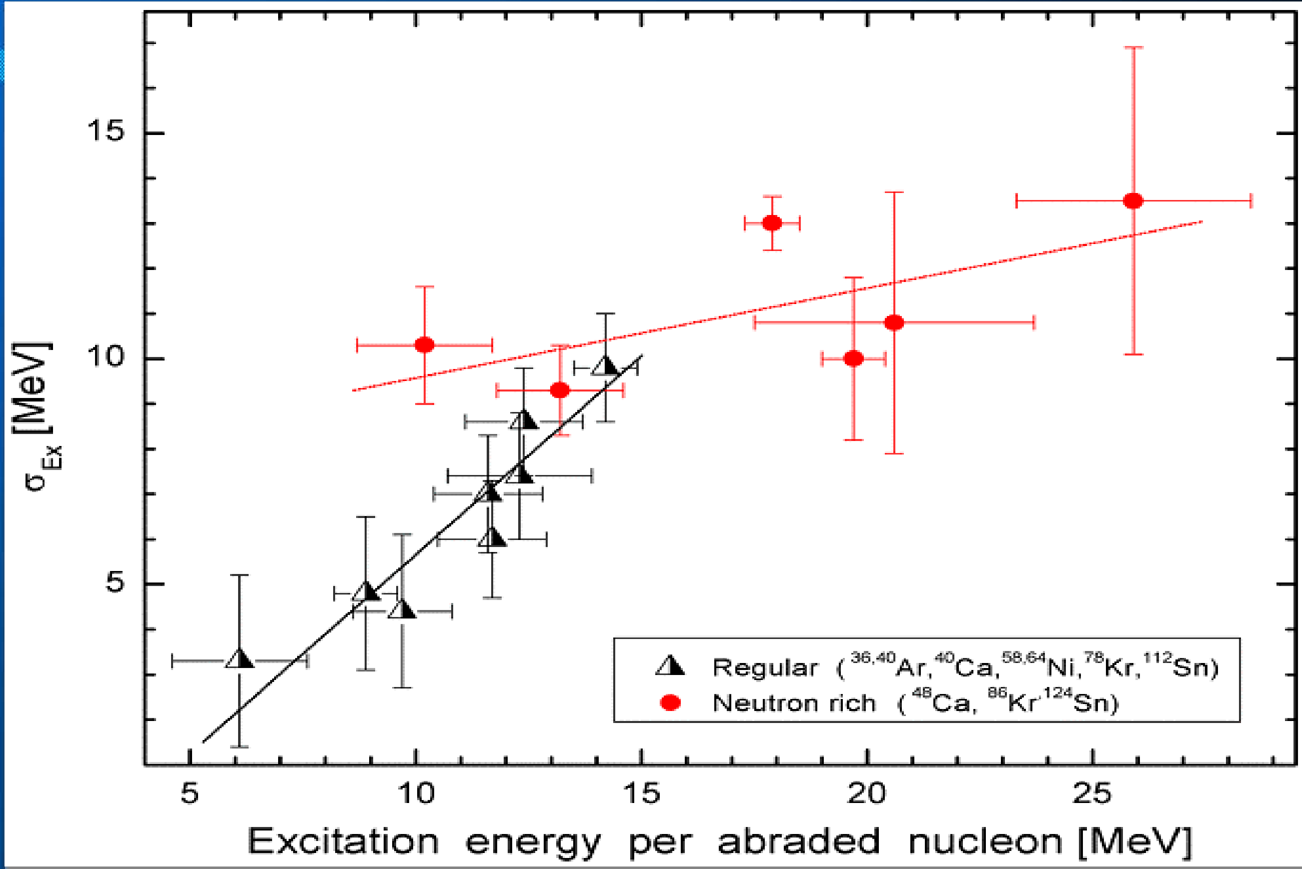




To produce 24O

Ex & sig(Ex)	Alpha	n
13.4 & 9.6	0.89	0.05
10 & 10	0.26	0.59

Excitation energy



Widths versus mean values of excitation energy distributions obtained by matching EPAX values with the AA model.

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Ex and sig(Ex) should be the function of dA in AA

What do we know from experiments?

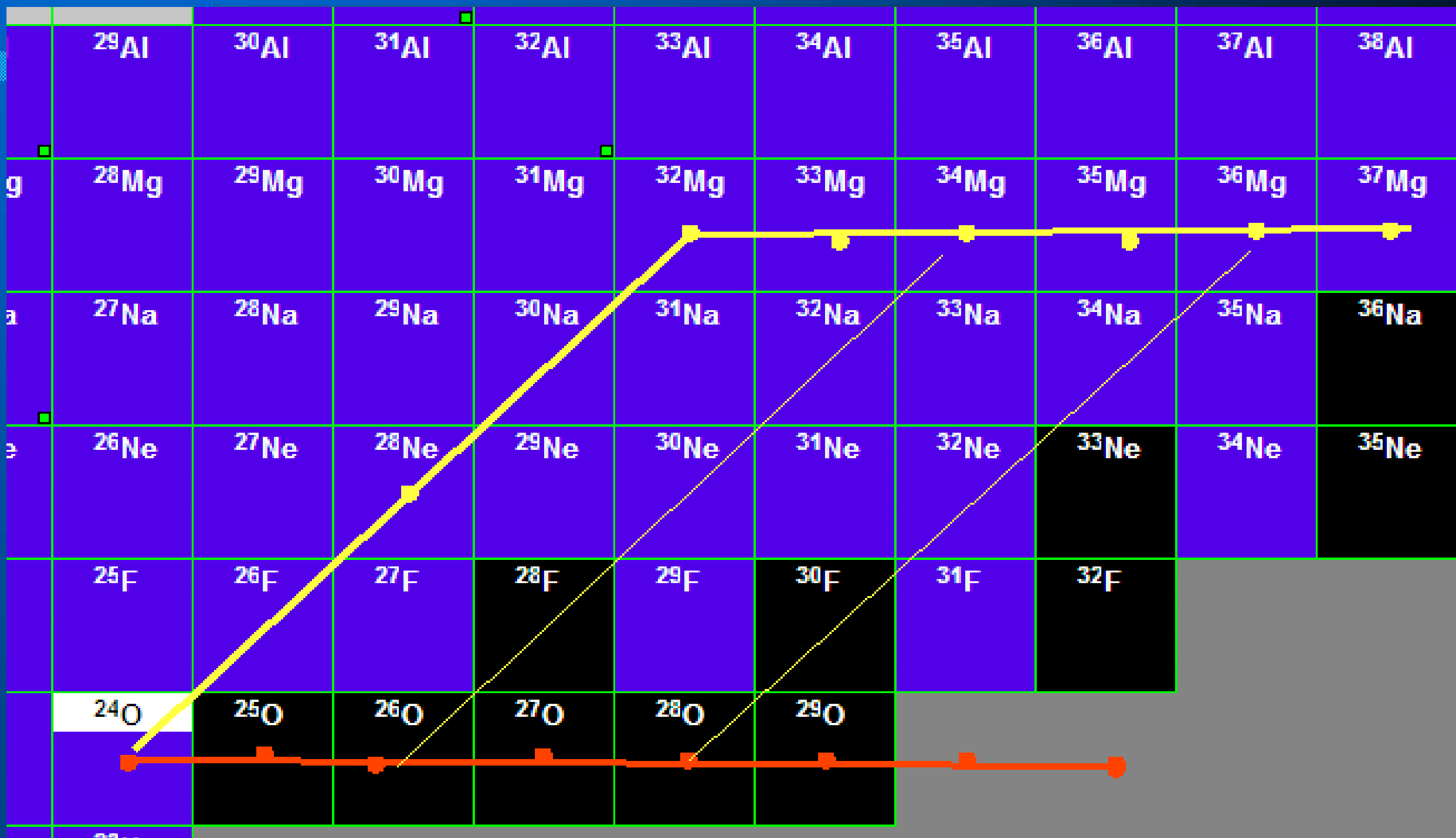
- Decreasing the projectile velocity – increase of production cross-section of neutron-rich isotopes
- Target with large Z – increase of production cross-section of neutron-rich isotopes
- Low Exponential tail is due to dissipative processes

Why?

- Time of dissipation is increasing
- Touching Area + Time of dissipation is increasing due to target size

Touching area is ~ to square (Chord_min)
Time of dissipation ~ to Chord_max & beam velocity
But Chords are functions of dA !

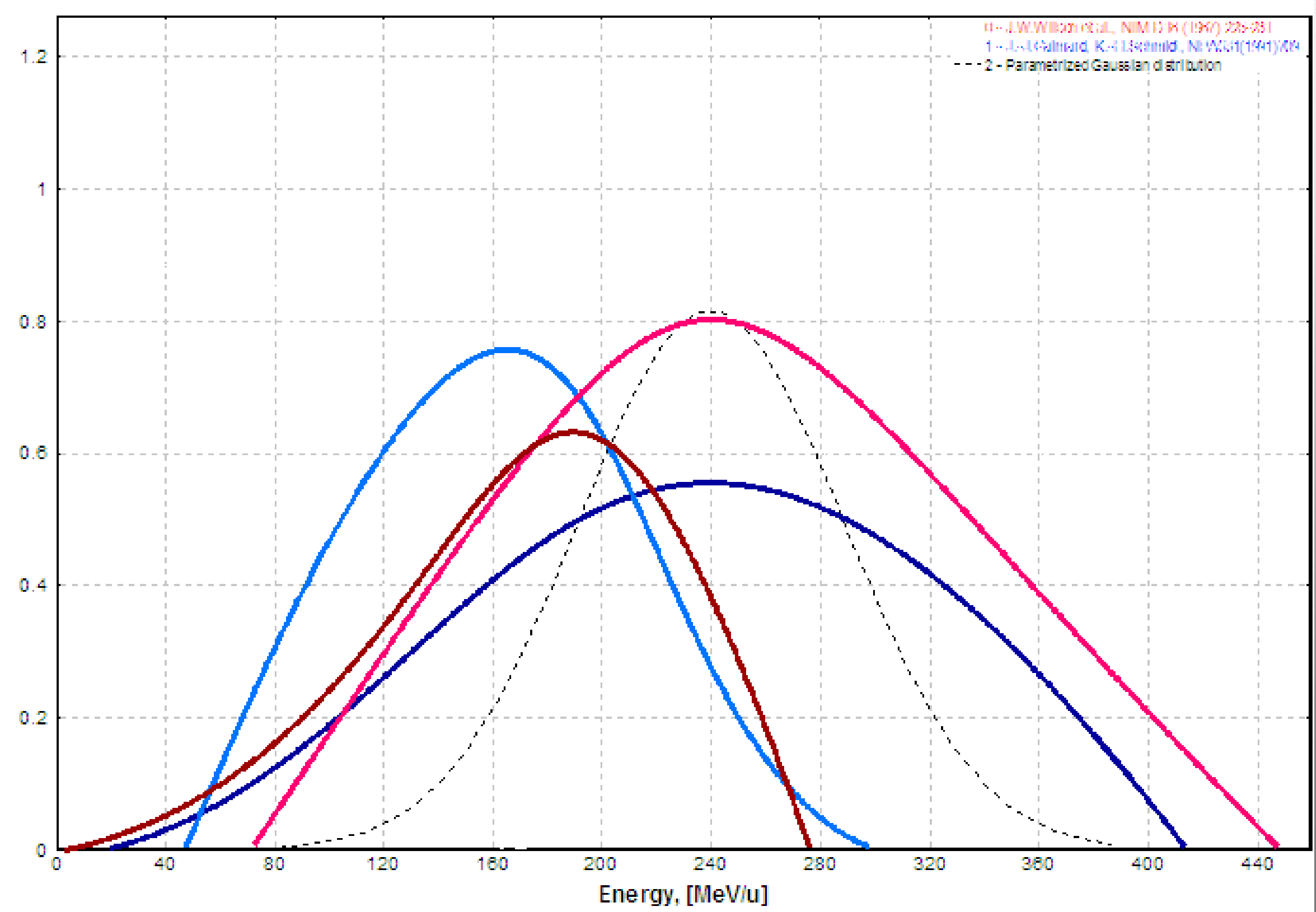
Dissipation process contribution defines a way to produce nucleus



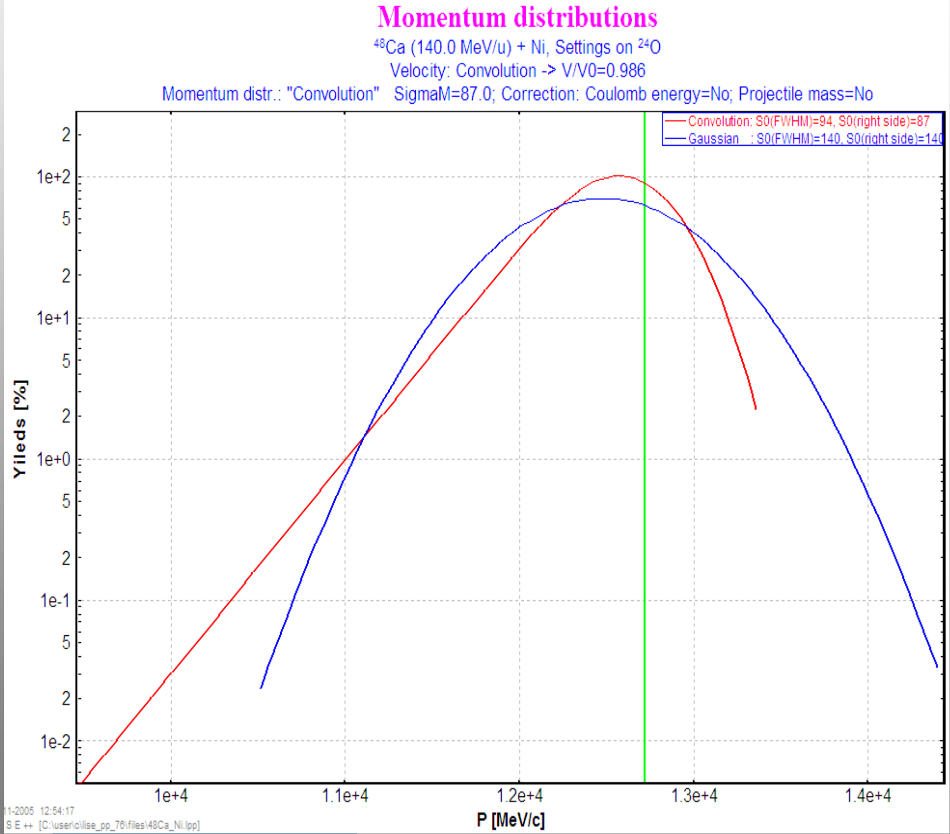
To produce ^{24}O

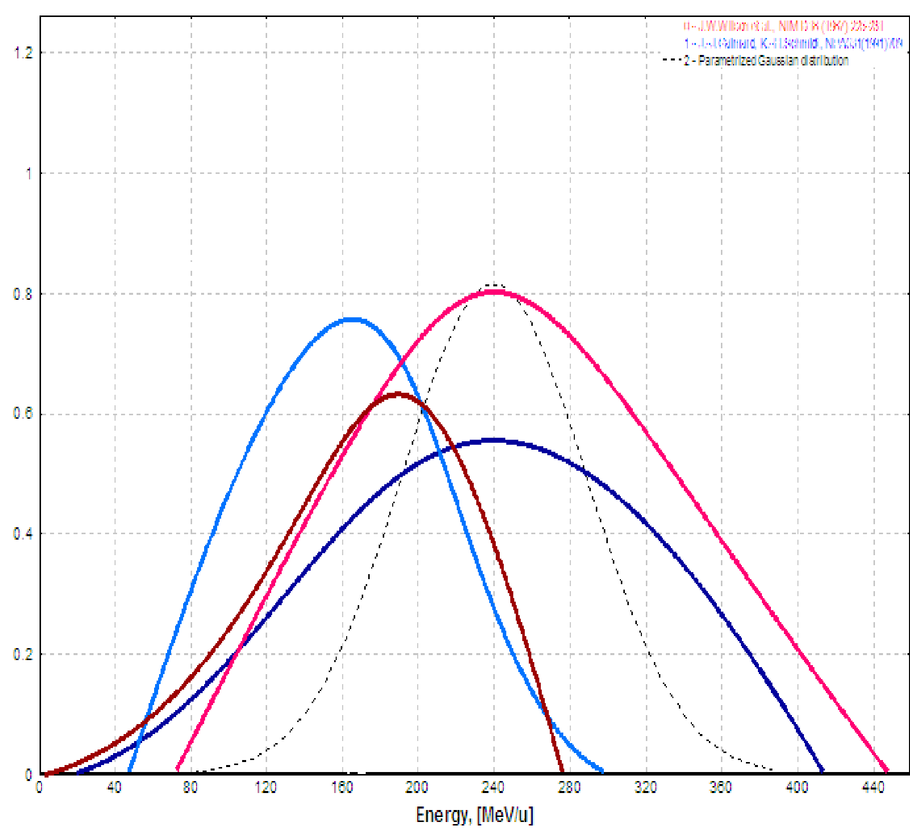
Ex & sig(Ex)	Alpha	n
13.4 & 9.6	0.89	0.05
10 & 10	0.26	0.59

Excitation energy distribution changes due to dissipation. What is shape??

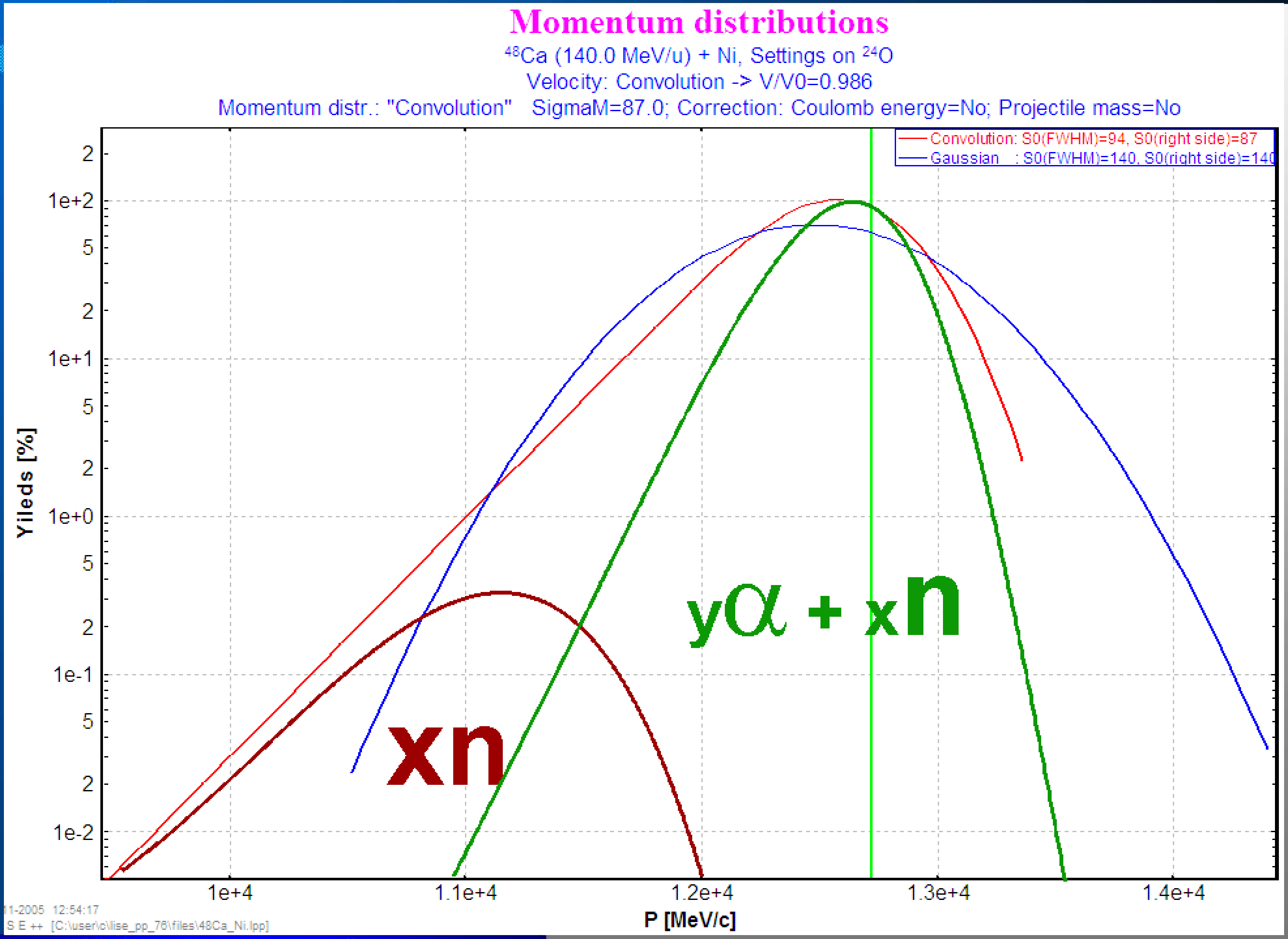


Is there a correlation between the final fragment momentum distribution and prefragment excitation energy?

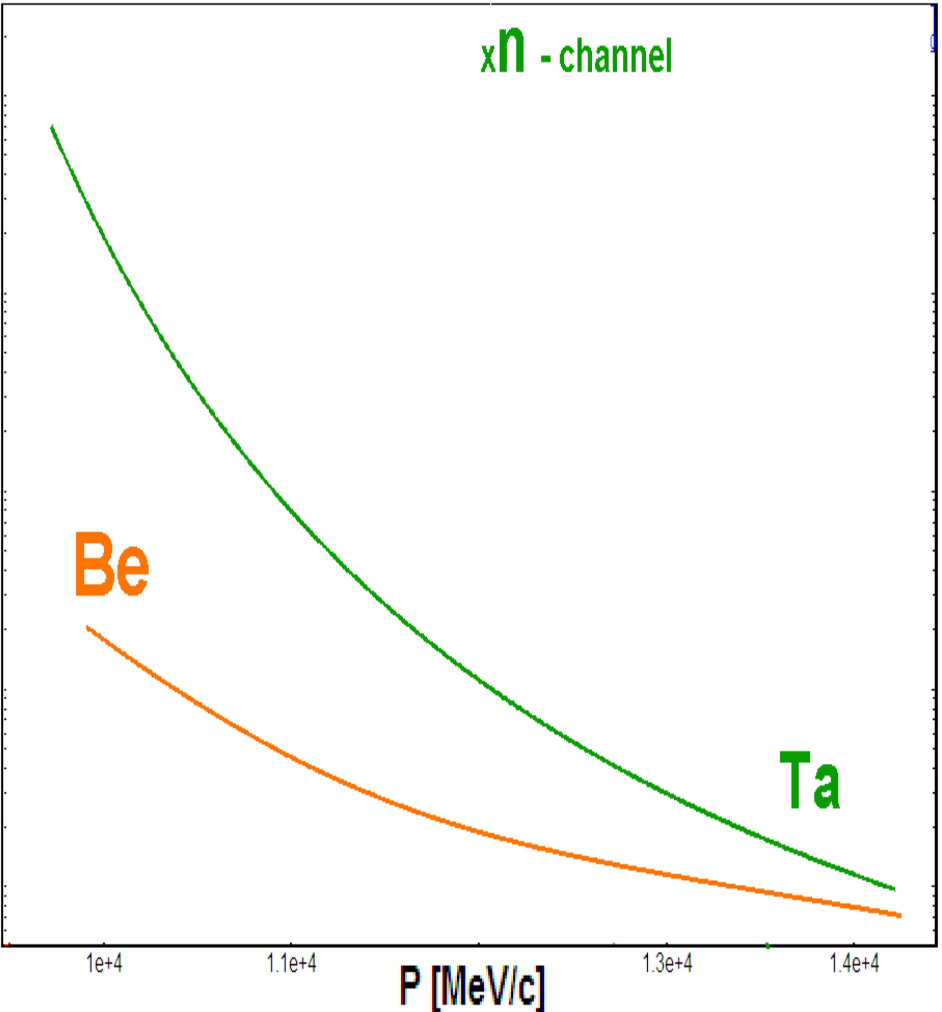


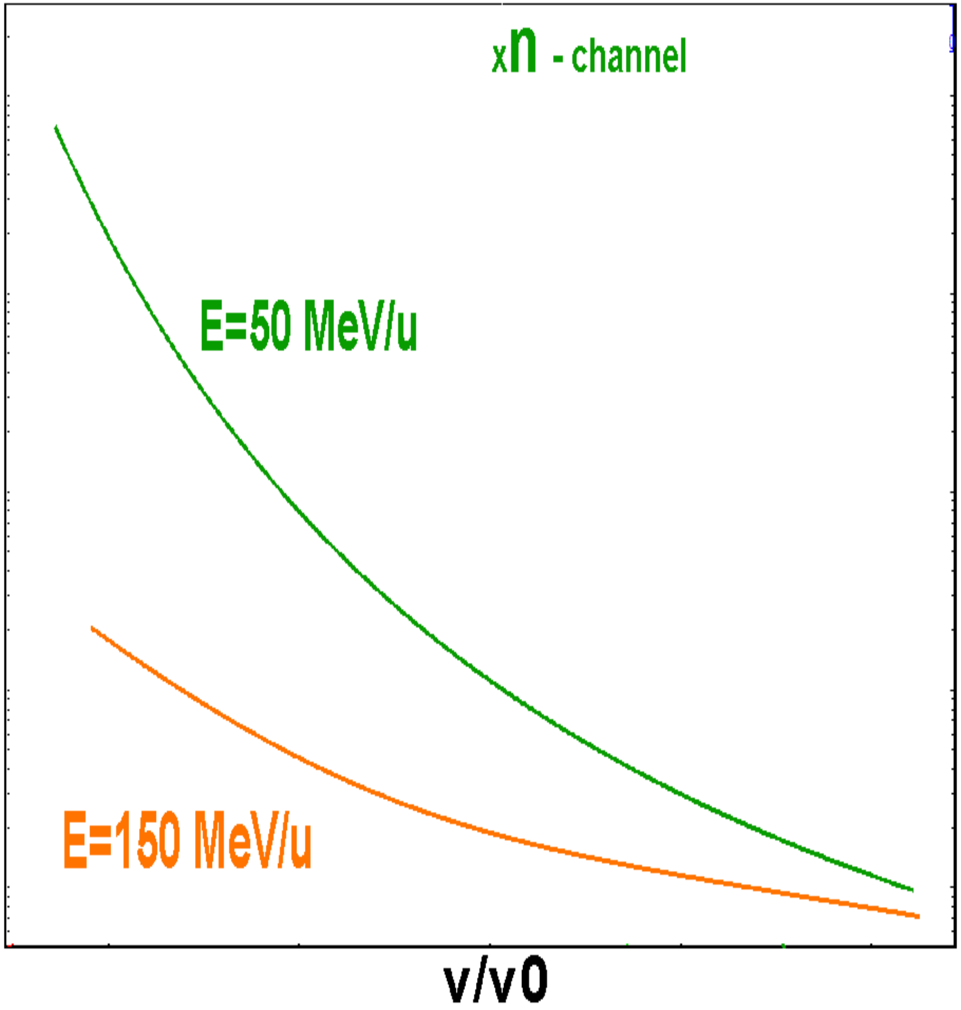


Or Is there a correlation between the final fragment momentum distribution and the chain of decays?

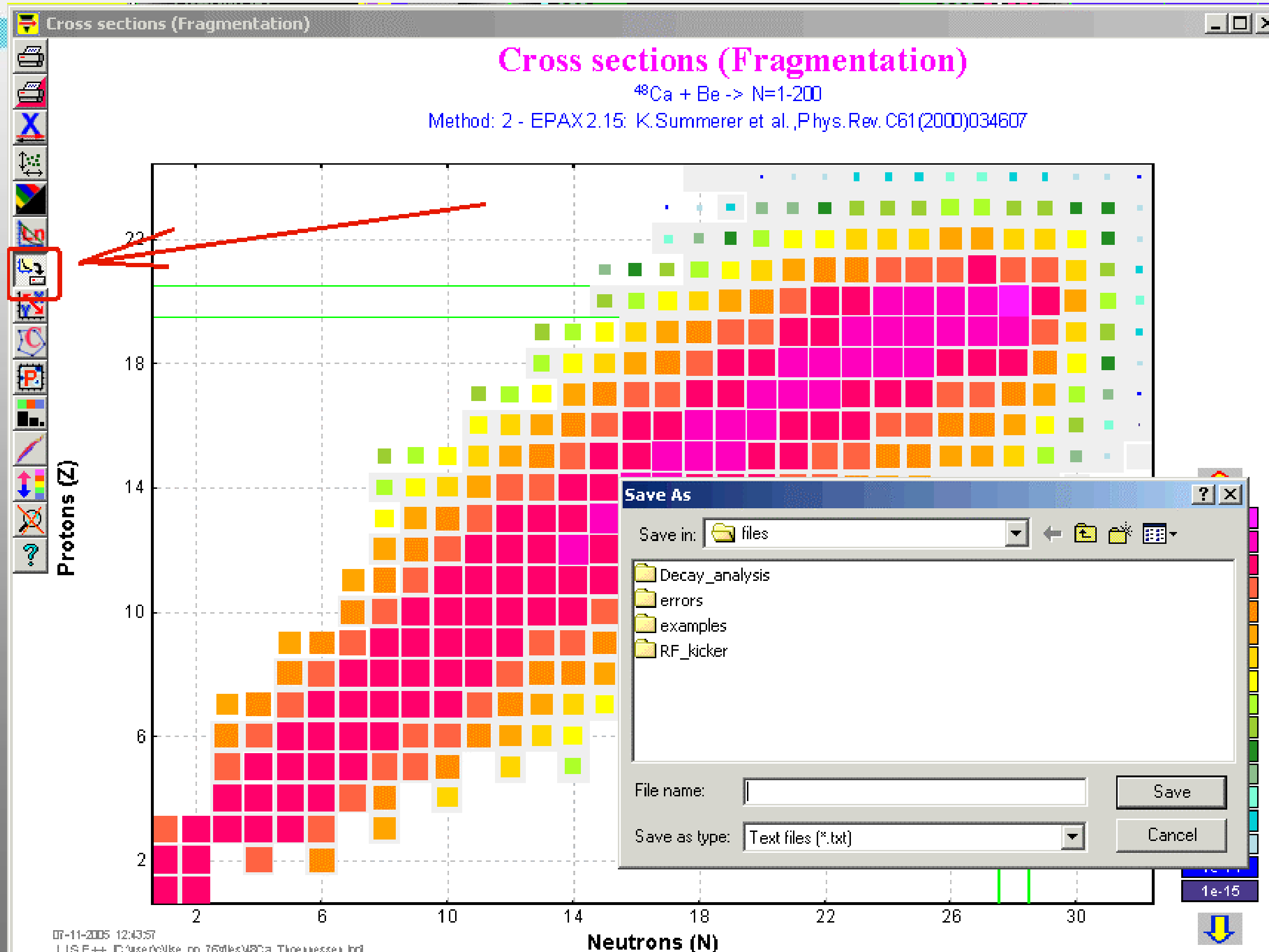


It will be nice to measure …. Fragment Energy vs N(n) [and N(alpha)??]
On different targets with the beam of different energies

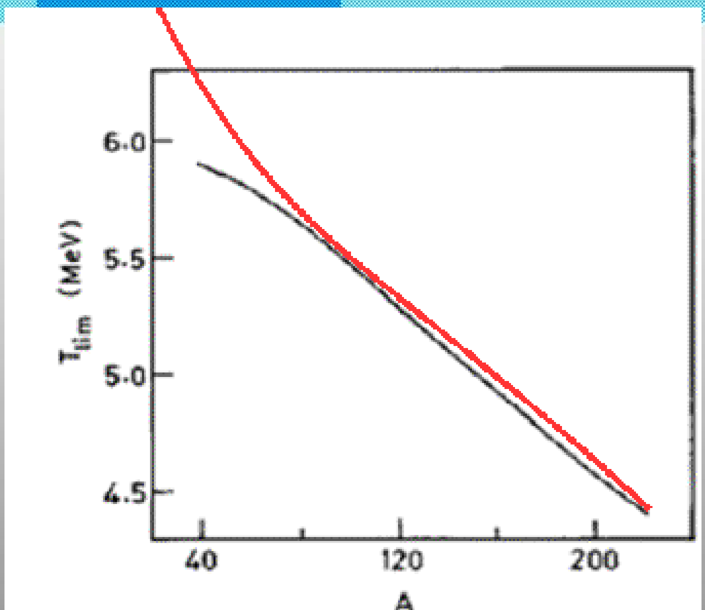




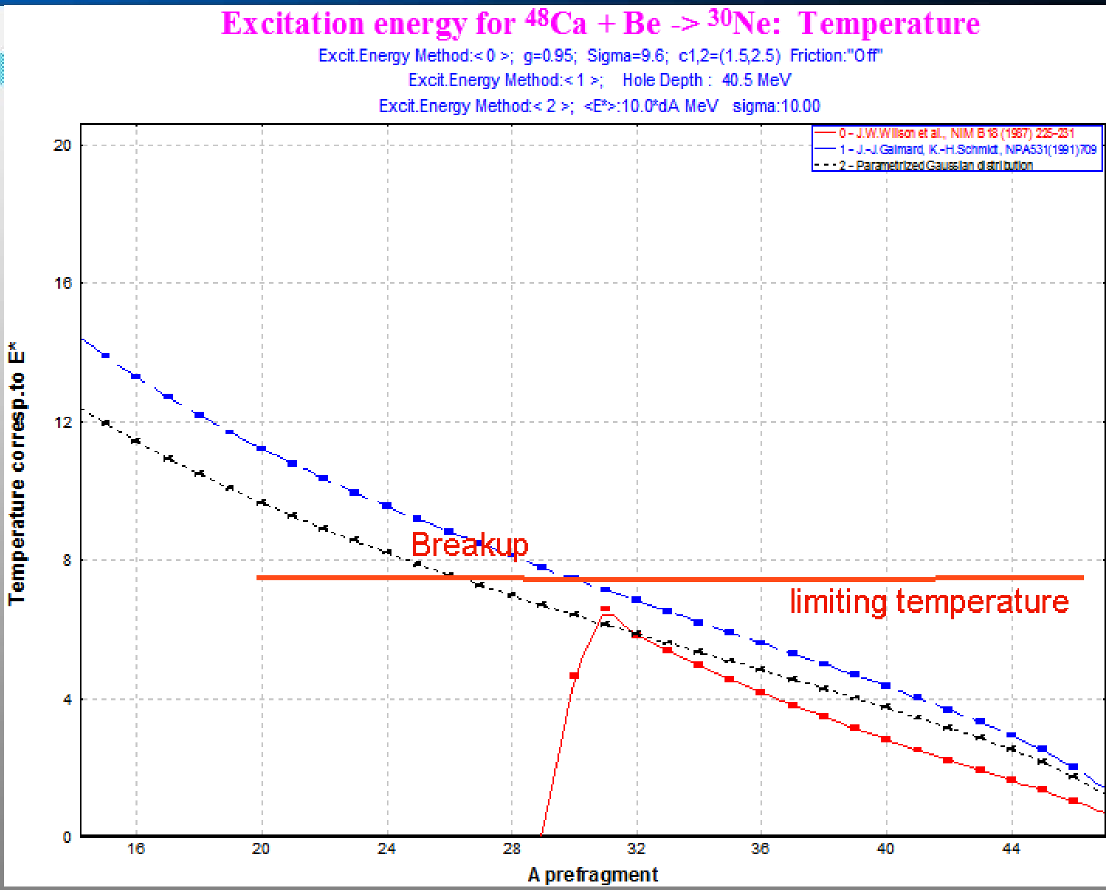
2D "Cross section" plot -> file



Break-up channel



The limiting temperature T_{lim} as a function of mass number on the β-stability line [De96].



^{36}S for ^{24}O?