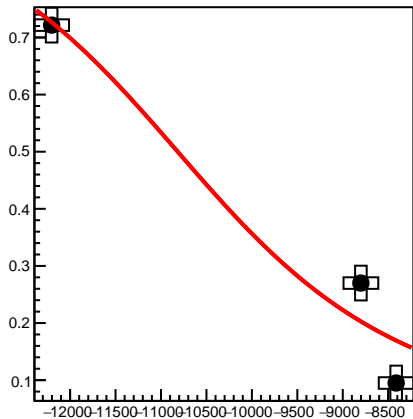
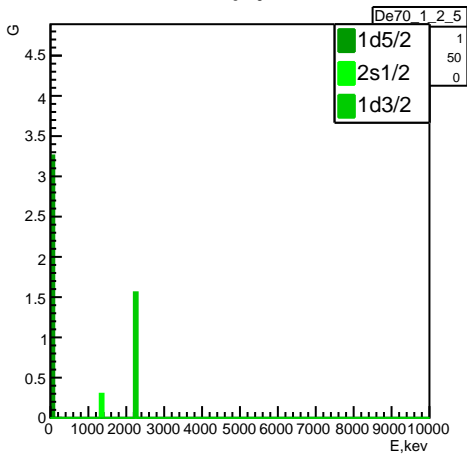
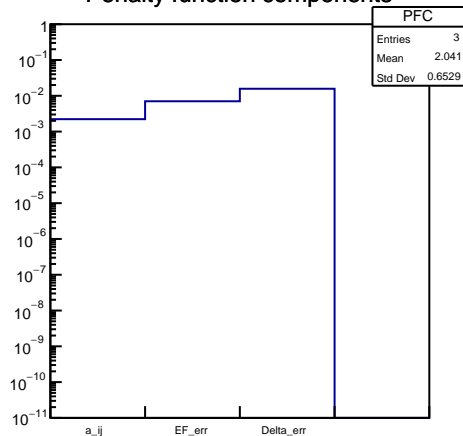


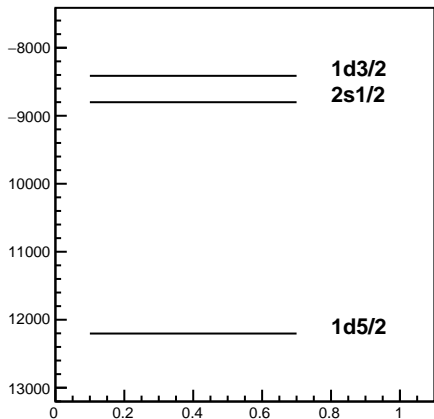
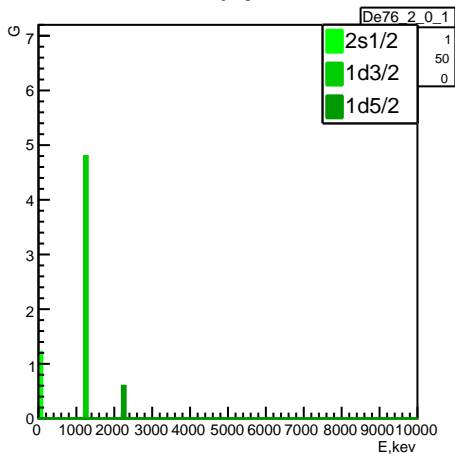
De70



Penalty function components



De76



Experiment: De70 (3) De76 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10816.1 \pm 575.544 keV Δ : 2726.94 \pm 847.406 keV

penalty: 0.00832566

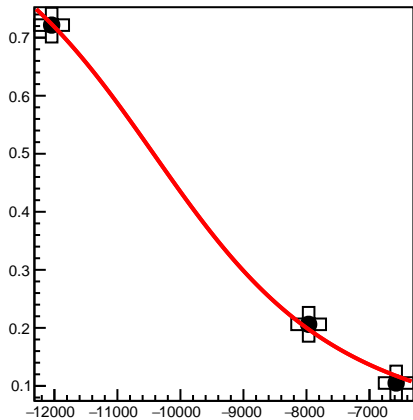
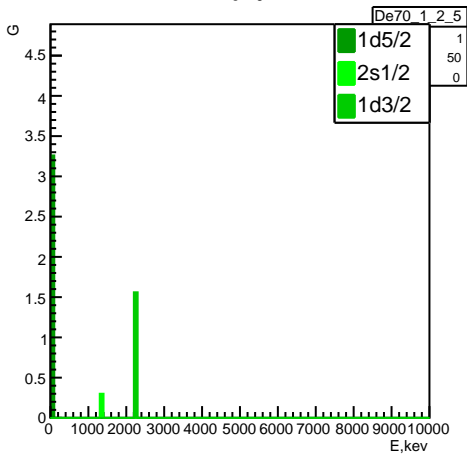
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12220.9 1d5/2 0.721667 0.643333

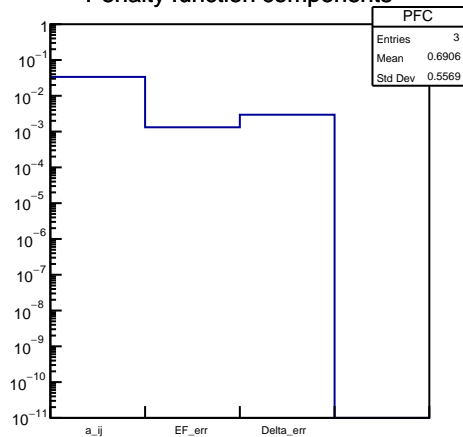
-8800.81 2s1/2 0.27 0.76

-8412.85 1d3/2 0.095 1.59

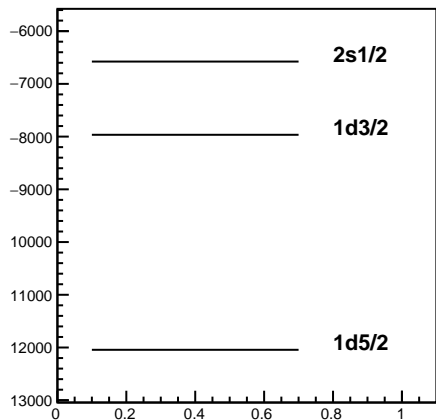
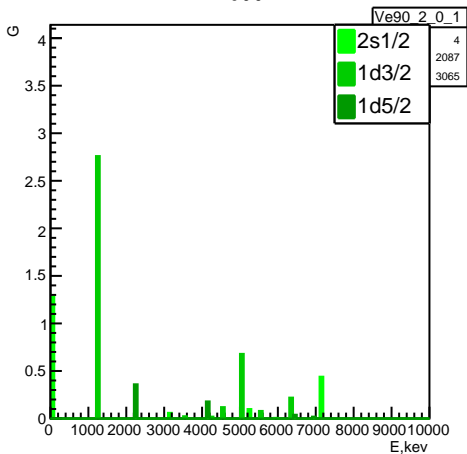
De70



Penalty function components



Ve90



Experiment: De70 (3) Ve90 (16)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10426.8 \pm 107.909 keV

Δ : -3238.11 \pm 159.484 keV

penalty: 0.0126573

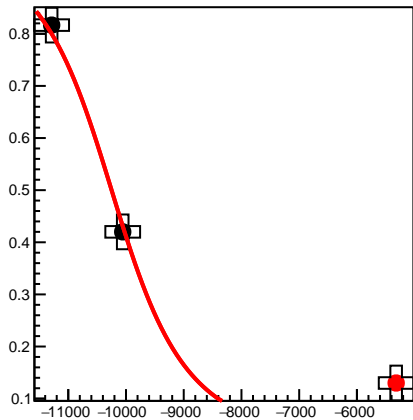
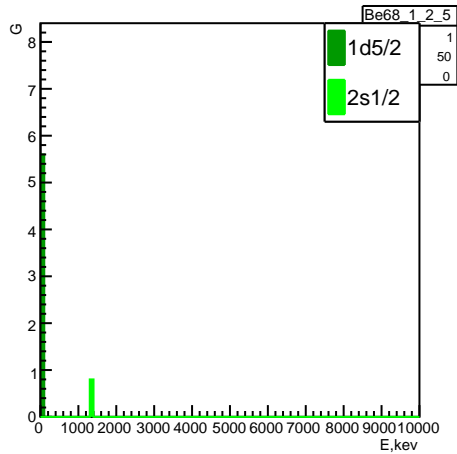
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12043.5 1d5/2 0.721667 0.643333

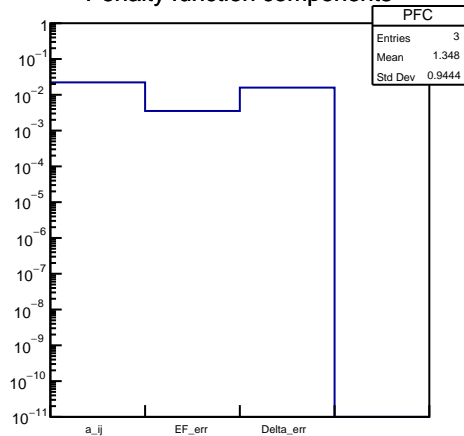
-6576.93 2s1/2 0.105 1.09

-7965.69 1d3/2 0.206125 1.36775

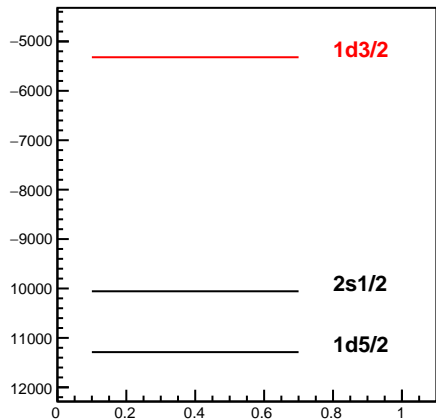
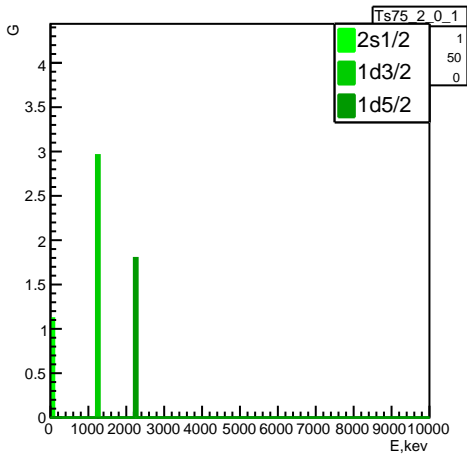
Be68



Penalty function components



Ts75



Experiment: Be68 (2) Ts75 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10249.5 \pm 288.976 keV Δ : 1383.81 \pm 855.672 keV

penalty: 0.0138764

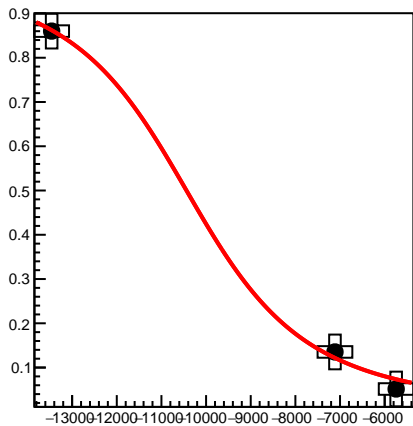
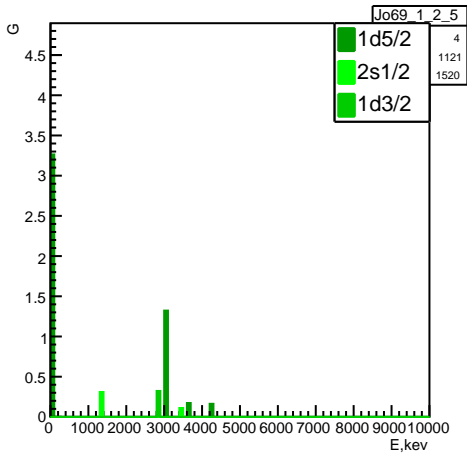
SPE, keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-11287.9 1d5/2 0.816667 1.23333

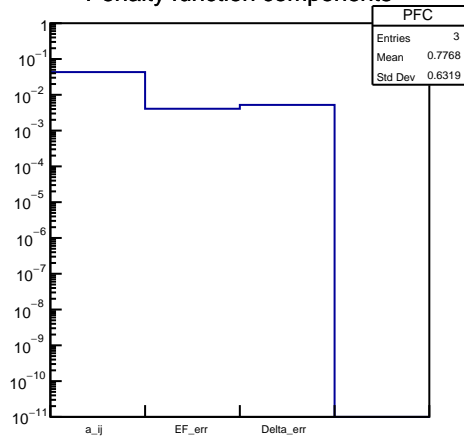
-10056.7 2s1/2 0.42 0.96

-5320.46 1d3/2 0.13 0.74

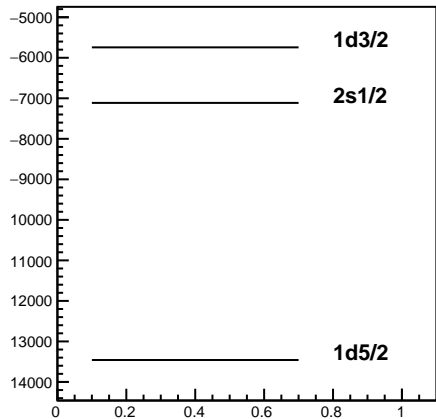
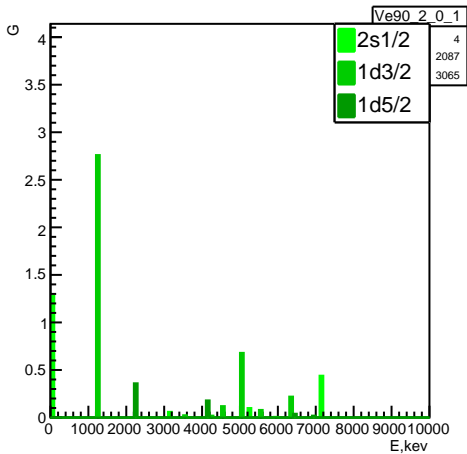
Jo69



Penalty function components



Ve90



Experiment: Jo69 (7) Ve90 (16)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10439.1 \pm 333.275 \text{ keV}$ $\Delta: 2873.41 \pm 281.139 \text{ keV}$

penalty: 0.0174664

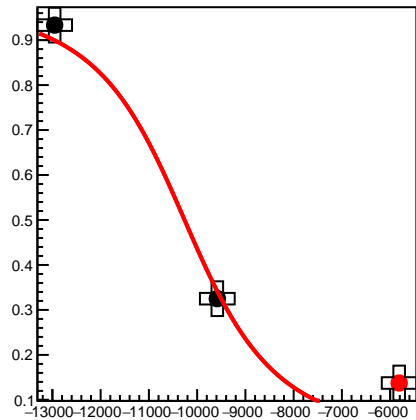
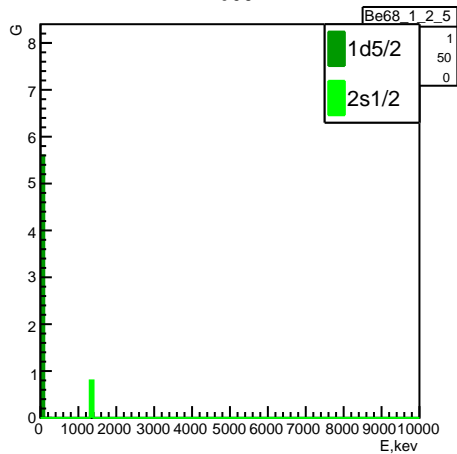
SPE, keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13458.6 1d5/2 0.860167 0.920333

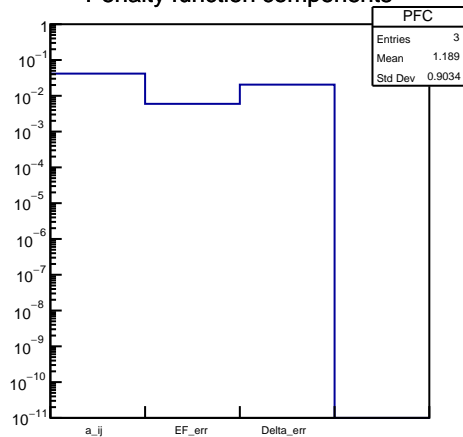
-7113.56 2s1/2 0.13525 1.1505

-5743.01 1d3/2 0.0515 1.0585

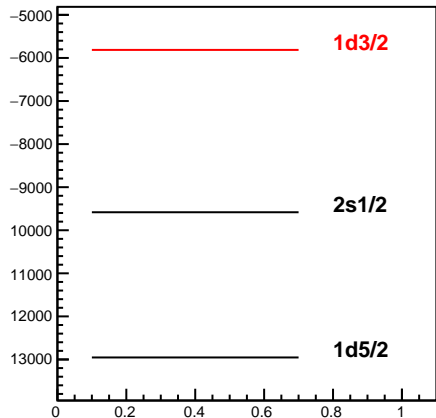
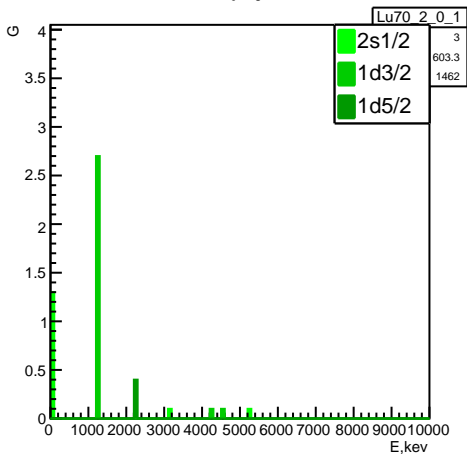
Be68



Penalty function components



Lu70



Experiment: Be68 (2) Lu70 (7)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10260.5 \pm 487.555 keV Δ : 2027.76 \pm 1105.17 keV

penalty: 0.0227097

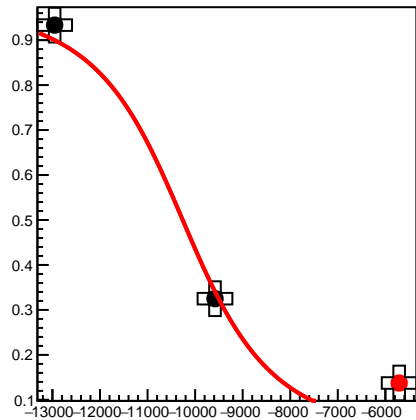
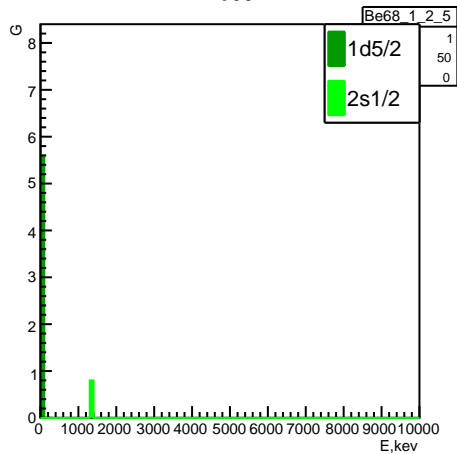
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12953.4 1d5/2 0.933333 1

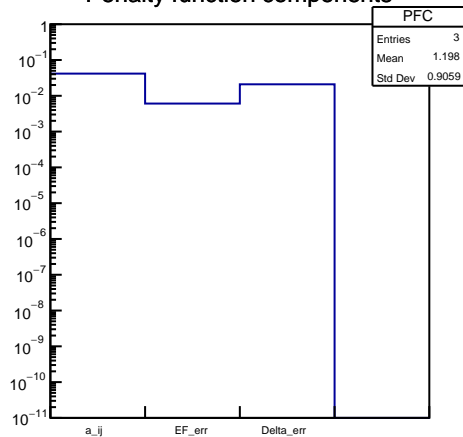
-9582.14 2s1/2 0.325 1.15

-5813.24 1d3/2 0.1375 0.725

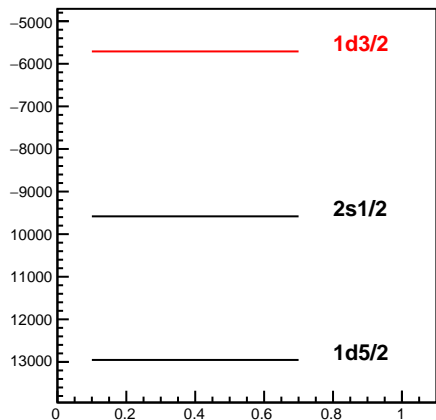
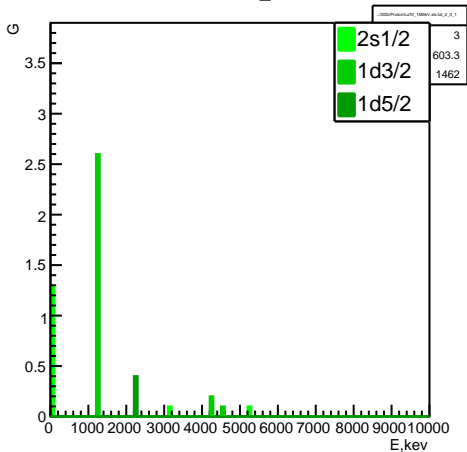
Be68



Penalty function components



../30Si/Proton/Lu70_15MeV.xls.txt



Experiment: Be68 (2) ../30Si/Proton/Lu70_15
proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10261.1 \pm 496.52 keV

Δ : 2020.8 \pm 1128.61 keV

penalty: 0.0228912

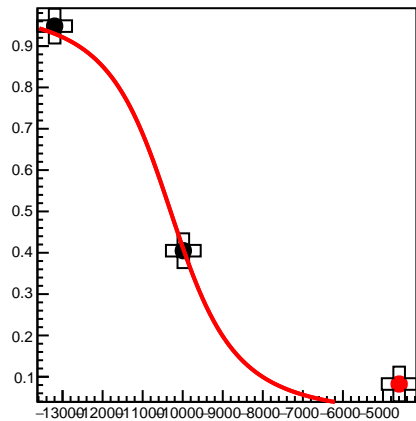
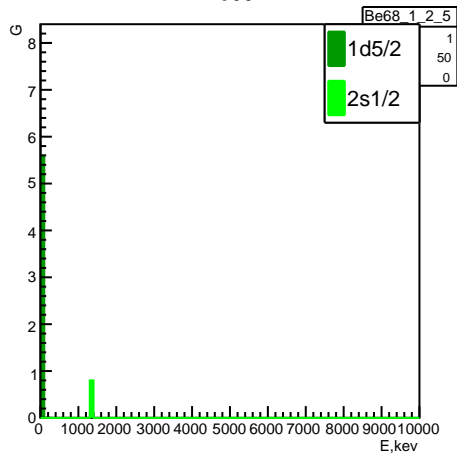
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12953.4 1d5/2 0.933333 1

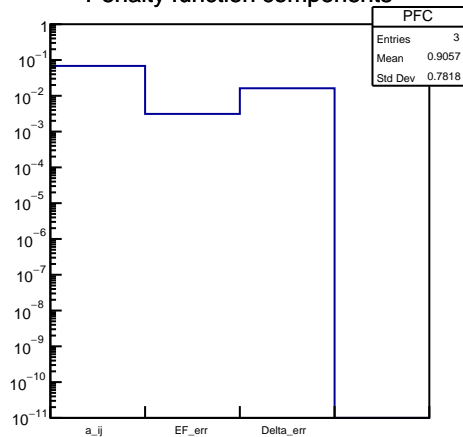
-9582.14 2s1/2 0.325 1.15

-5709.99 1d3/2 0.1375 0.725

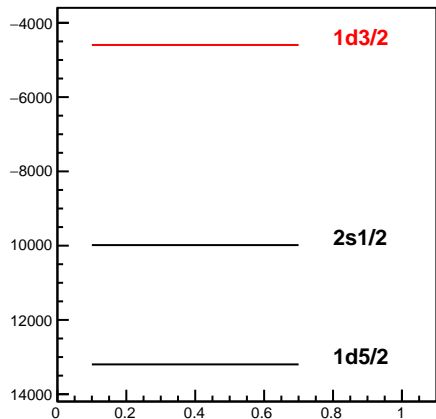
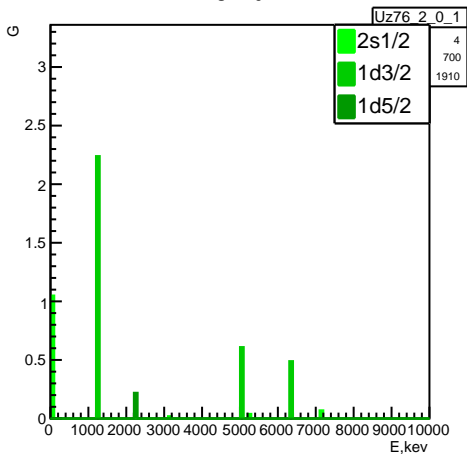
Be68



Penalty function components



Uz76



Experiment: Be68 (2) Uz76 (8)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10302.6 \pm 255.115 \text{ keV}$ $\Delta: -1720.46 \pm 874.412 \text{ keV}$

penalty: 0.0292248

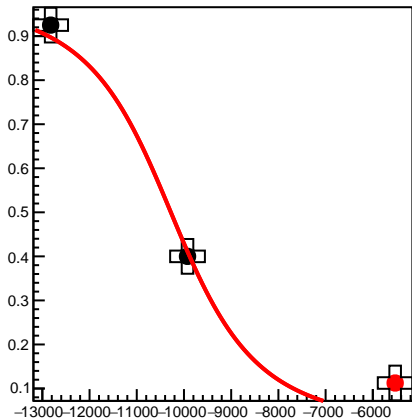
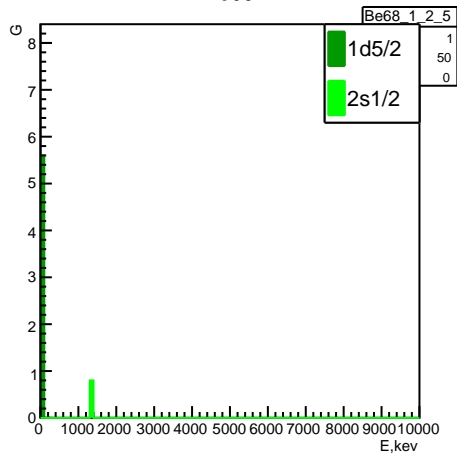
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13197.4 1d5/2 0.948333 0.97

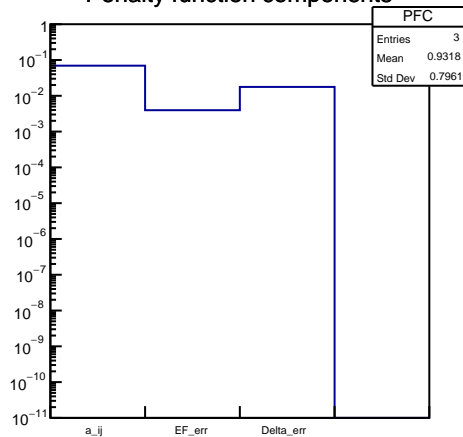
-9984.85 2s1/2 0.405 0.99

-4596.18 1d3/2 0.0825 0.835

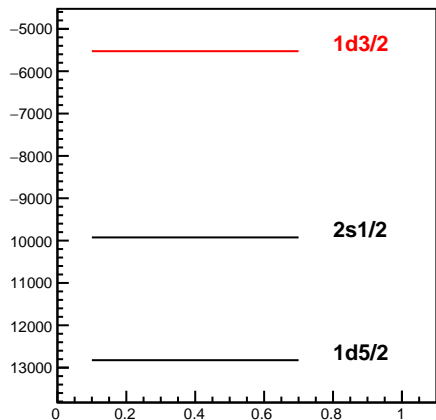
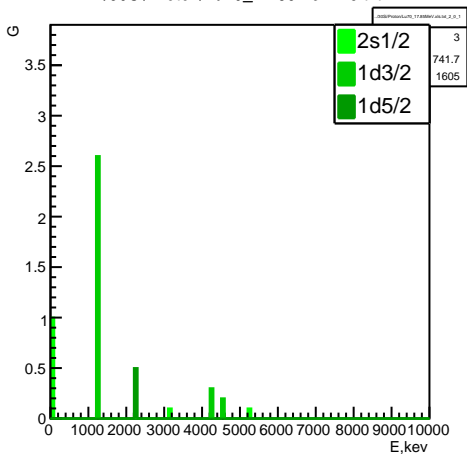
Be68



Penalty function components



../30Si/Proton/Lu70_17.85MeV.xls.txt



Experiment: Be68 (2) ../30Si/Proton/Lu70_17
proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10277.7 \pm 323.771 keV

Δ : -1946.48 \pm 953.369 keV

penalty: 0.0303631

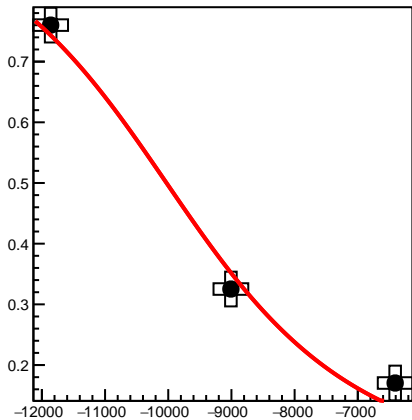
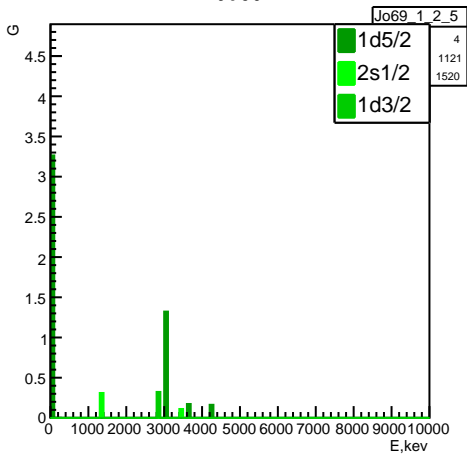
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12824 1d5/2 0.925 1.01667

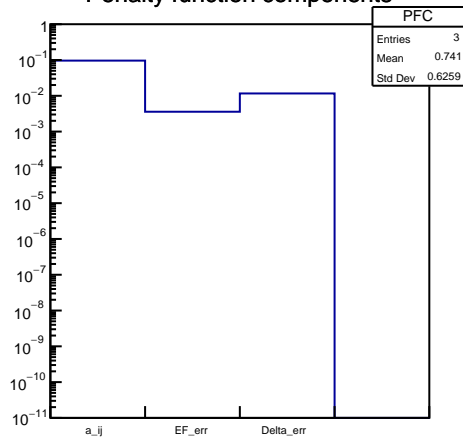
-9924.86 2s1/2 0.4 1

-5526.82 1d3/2 0.1125 0.775

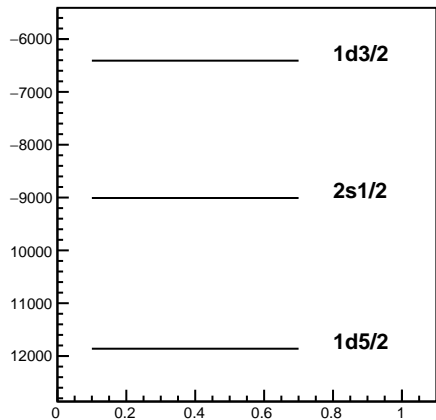
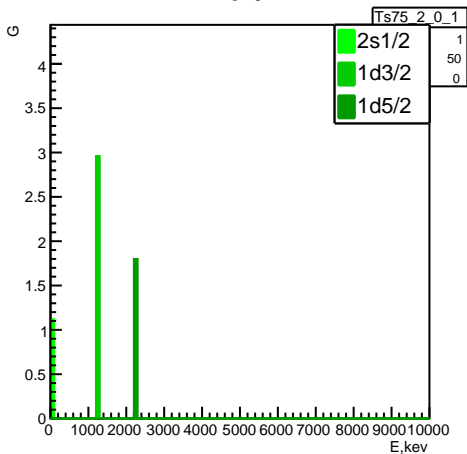
Jo69



Penalty function components



Ts75



Experiment: Jo69 (7) Ts75 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10027.2 \pm 293.415 \text{ keV}$ $\Delta: 3291.01 \pm 626.599 \text{ keV}$

penalty: 0.0371166

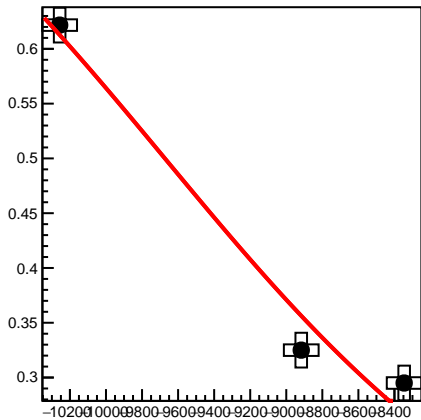
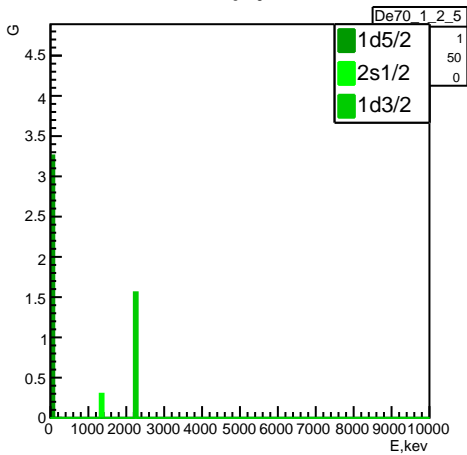
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-11861.2 1d5/2 0.760167 1.12033

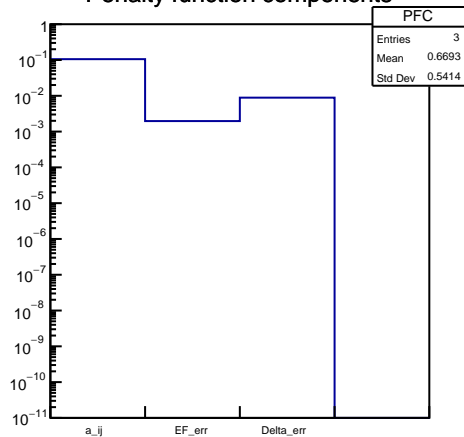
-9008.48 2s1/2 0.32525 0.7705

-6408.82 1d3/2 0.170375 0.82075

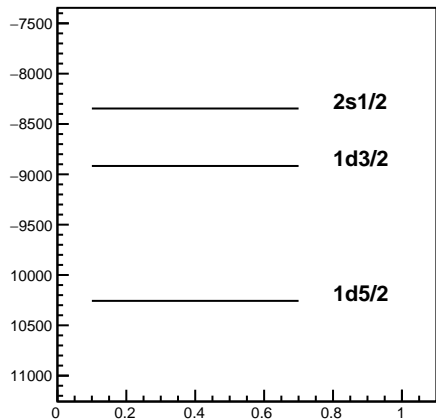
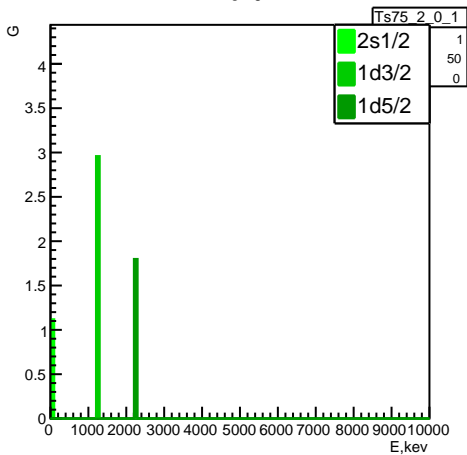
De70



Penalty function components



Ts75



Experiment: De70 (3) Ts75 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -9673.35 \pm 160.911 \text{ keV}$ $\Delta: 2521.86 \pm 478.11 \text{ keV}$

penalty: 0.0387975

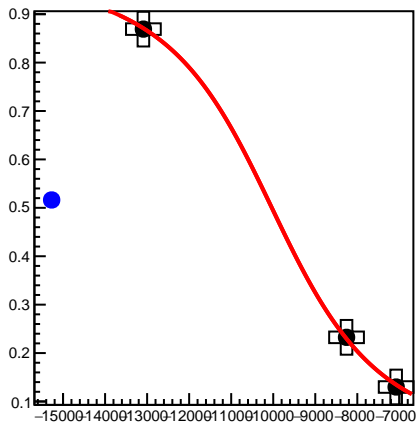
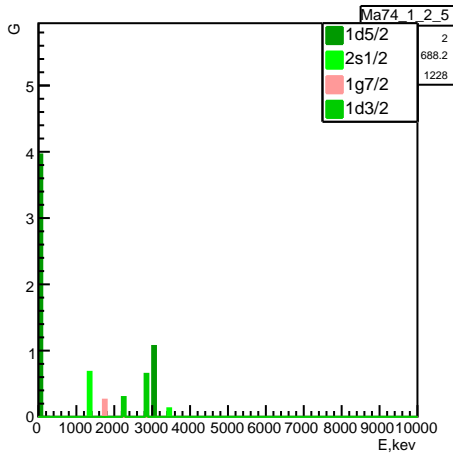
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-10257 1d5/2 0.621667 0.843333

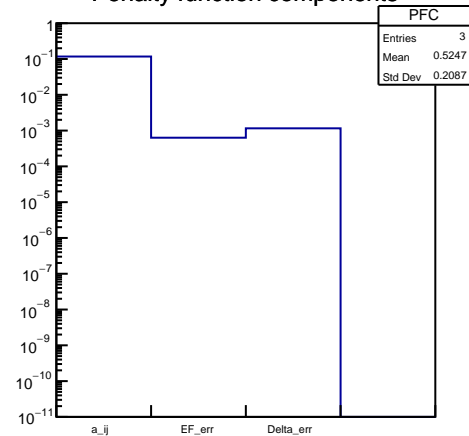
-8346.11 2s1/2 0.295 0.71

-8916.94 1d3/2 0.325 1.13

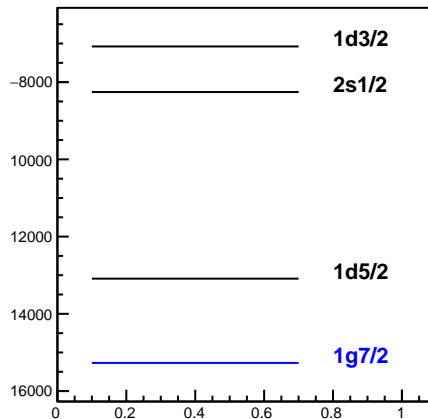
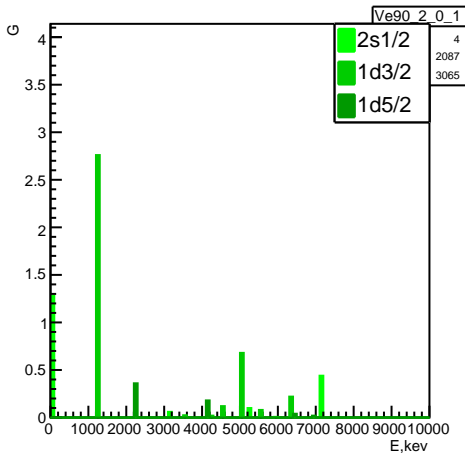
Ma74



Penalty function components



Ve90



Experiment: Ma74 (7) Ve90 (16)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10032.9 \pm 51.7404 keV Δ : 2762.57 \pm 62.3045 keV

penalty: 0.0396724

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

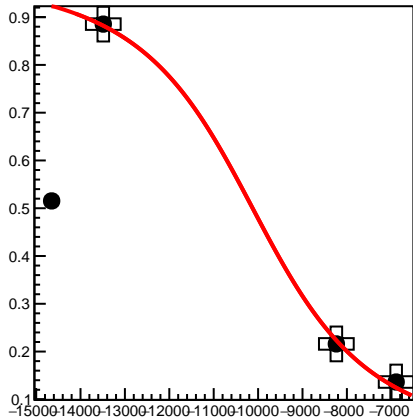
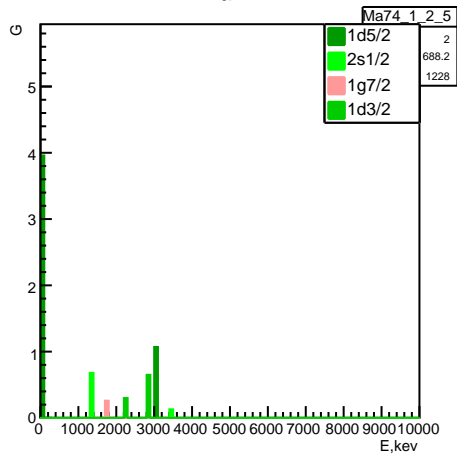
-13088.6 1d5/2 0.869167 0.938333

-8256.09 2s1/2 0.2325 1.345

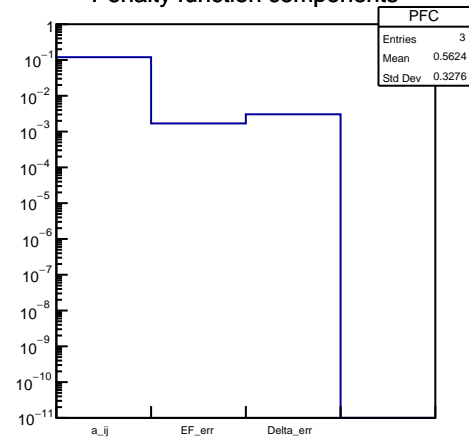
-15271.2 1g7/2 0.51625 0.0325

-7075.77 1d3/2 0.129875 1.21525

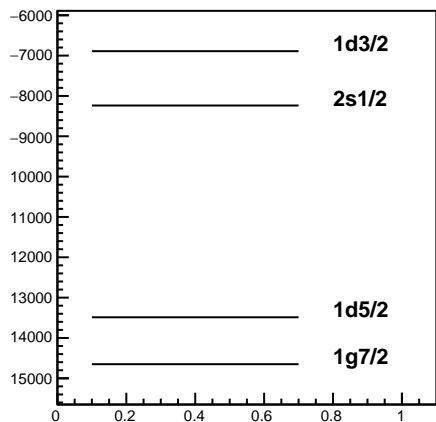
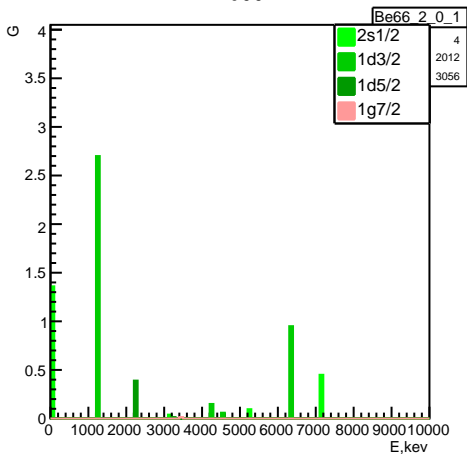
Ma74



Penalty function components



Be66



Experiment: Ma74 (7) Be66 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10123.2 \pm 138.242 keV Δ : 2839.91 \pm 163.847 keV

penalty: 0.0415173

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

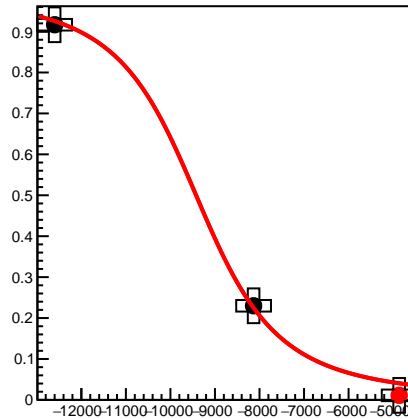
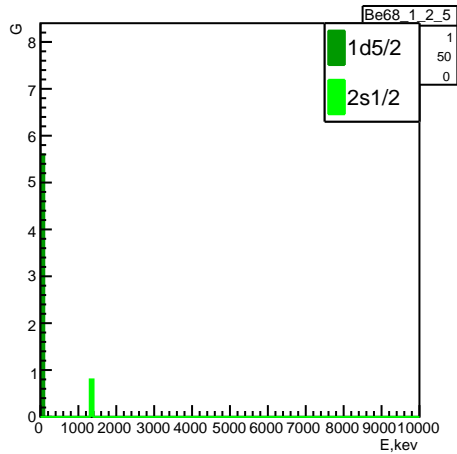
-13486.9 1d5/2 0.885417 0.905833

-8237.6 2s1/2 0.216 1.378

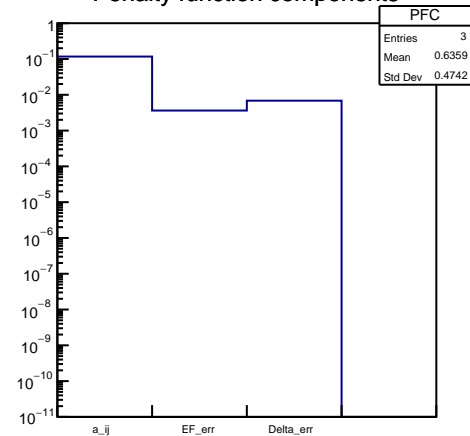
-14650 1g7/2 0.515313 0.034375

-6890.59 1d3/2 0.13625 1.2025

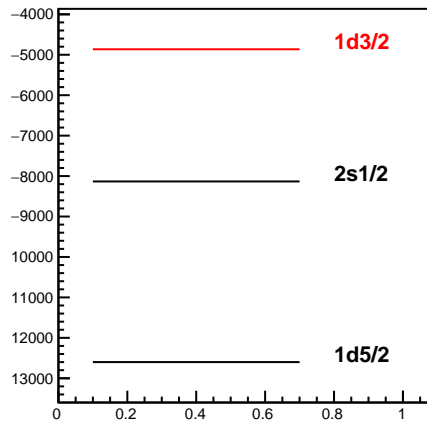
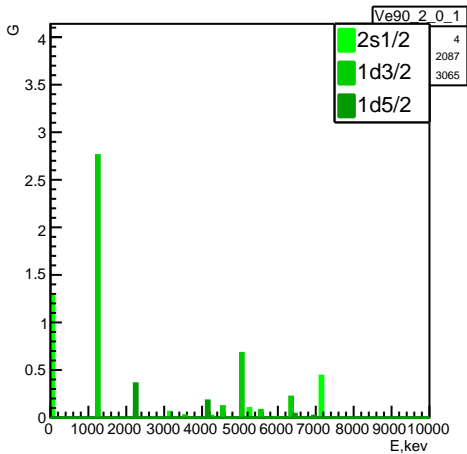
Be68



Penalty function components



Ve90



Experiment: Be68 (2) Ve90 (16)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -9423.41 \pm 297.226$ keV $\Delta: -1958.76 \pm 369.093$ keV

penalty: 0.0425025

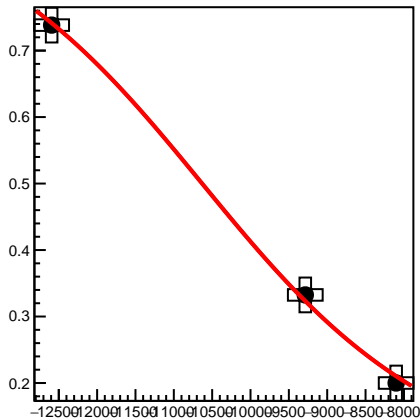
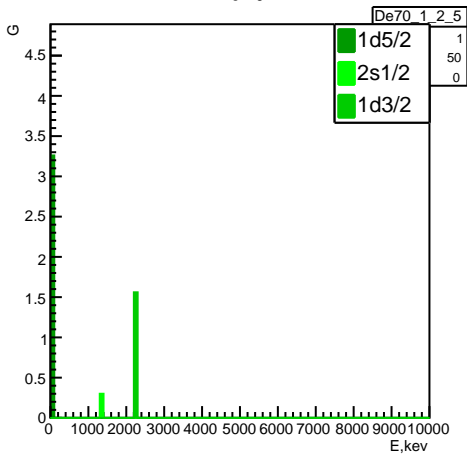
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12599.6 1d5/2 0.916667 1.03333

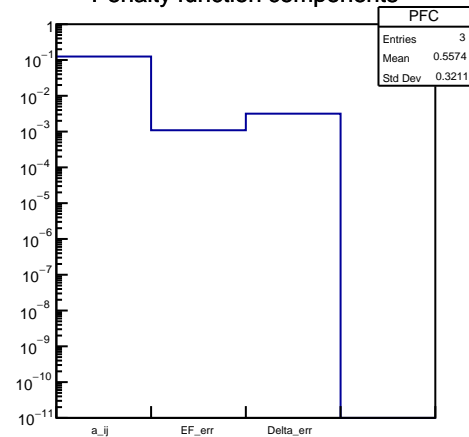
-8132.54 2s1/2 0.23 1.34

-4864.31 1d3/2 0.011125 0.97775

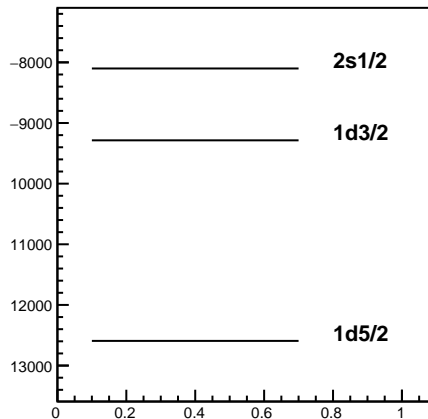
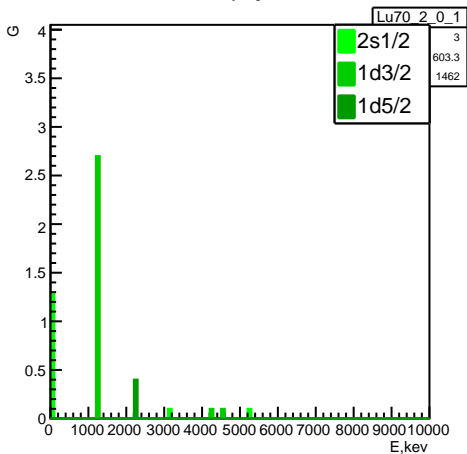
De70



Penalty function components



Lu70



Experiment: De70 (3) Lu70 (7)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10630.7 \pm 89.2047 \text{ keV}$ $\Delta: 3559.23 \pm 170.641 \text{ keV}$

penalty: 0.0430853

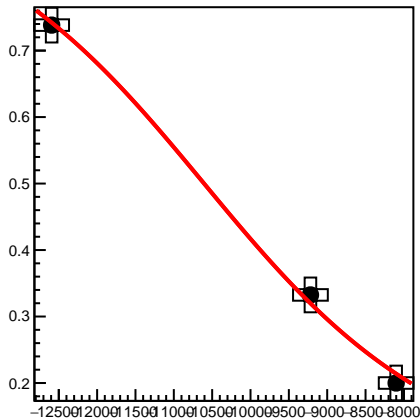
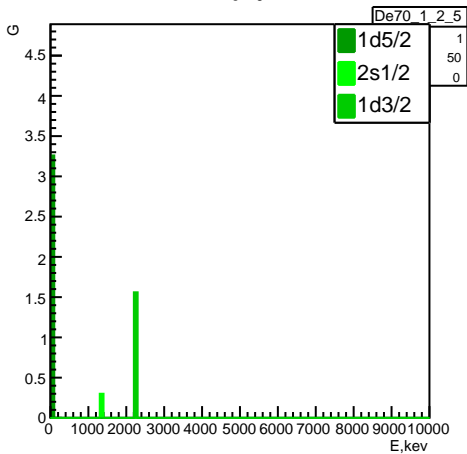
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12593.1 1d5/2 0.738333 0.61

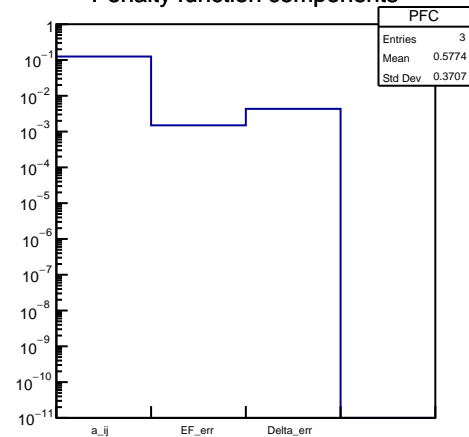
-8100.8 2s1/2 0.2 0.9

-9285.73 1d3/2 0.3325 1.115

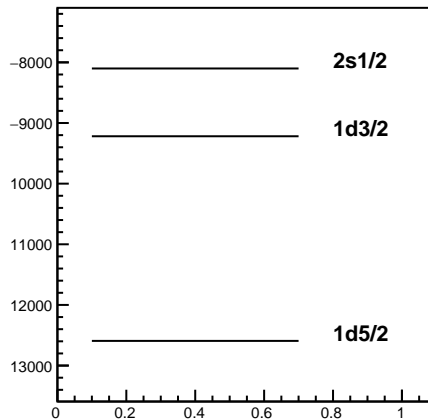
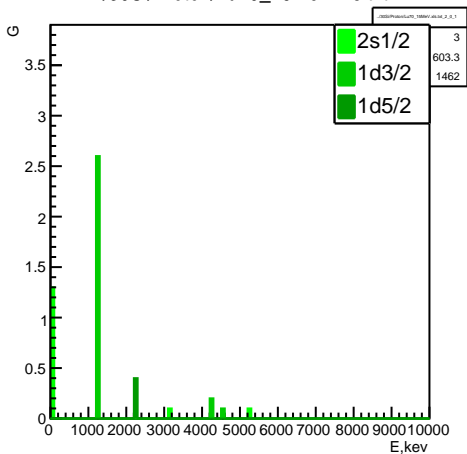
De70



Penalty function components



../30Si/Proton/Lu70_15MeV.xls.txt



Experiment: De70 (3) ../30Si/Proton/Lu70_15

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10605.4 \pm 122.357 \text{ keV}$ $\Delta: -3590.91 \pm 232.572 \text{ keV}$

penalty: 0.0436034

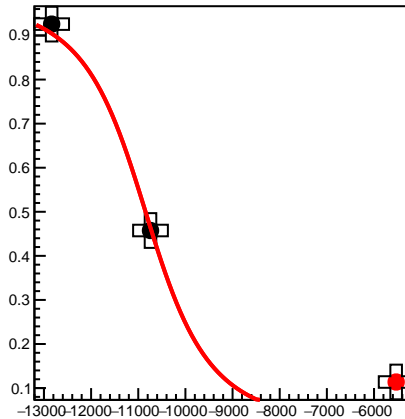
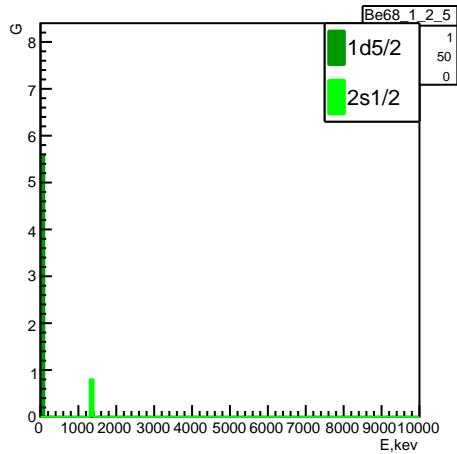
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12593.1 1d5/2 0.738333 0.61

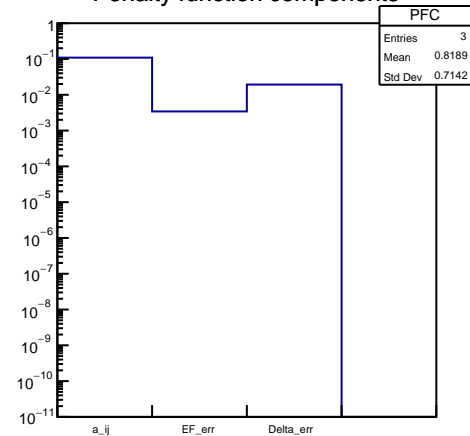
-8100.8 2s1/2 0.2 0.9

-9218.6 1d3/2 0.3325 1.115

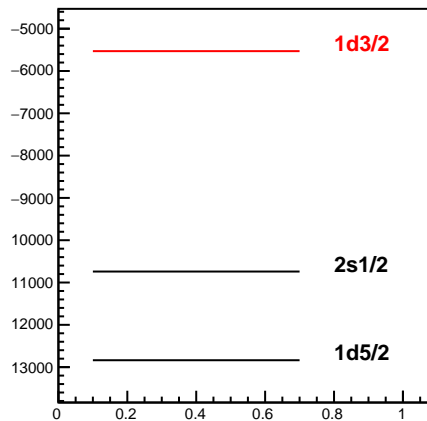
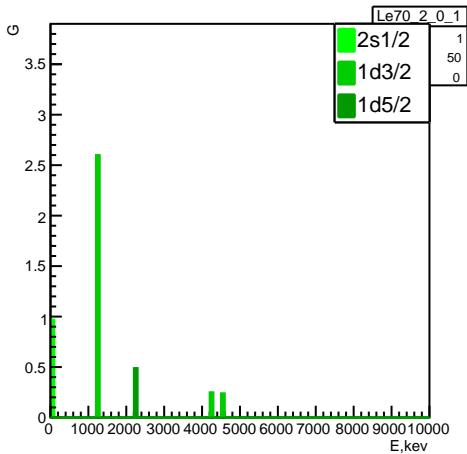
Be68



Penalty function components



Le70



Experiment: Be68 (2) Le70 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10845.6 \pm 280.555 \text{ keV}$ $\Delta: 1446.64 \pm 1041.07 \text{ keV}$

penalty: 0.0439703

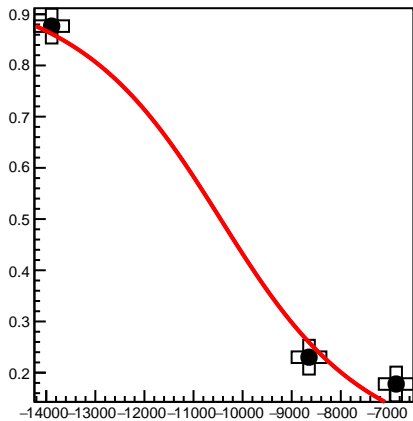
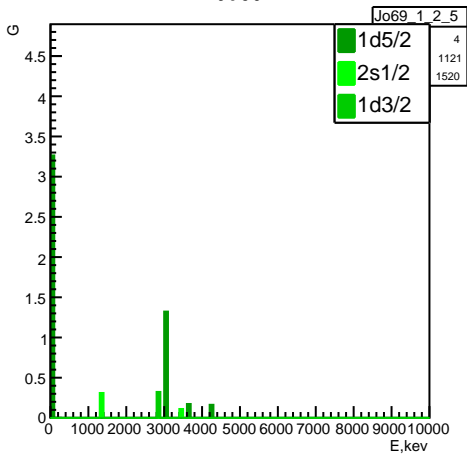
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12836.8 1d5/2 0.925833 1.015

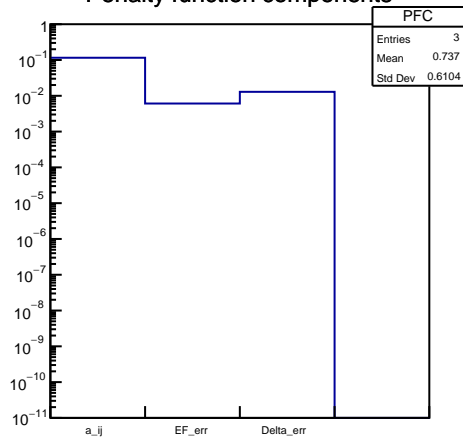
-10740.3 2s1/2 0.4575 0.885

-5530.58 1d3/2 0.11375 0.7725

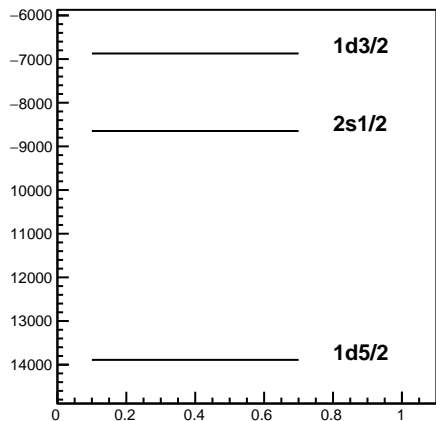
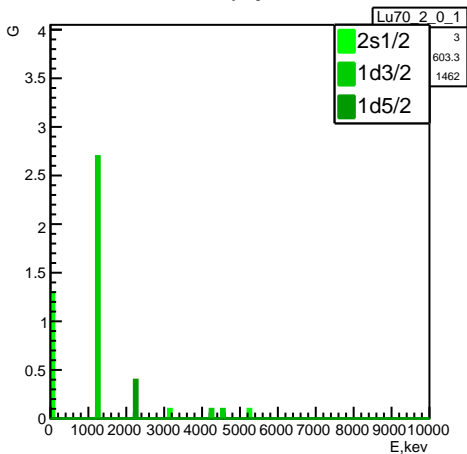
Jo69



Penalty function components



Lu70



Experiment: Jo69 (7) Lu70 (7)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10449.4 \pm 497.954 keV Δ : 3281.12 \pm 695.325 keV

penalty: 0.0448561

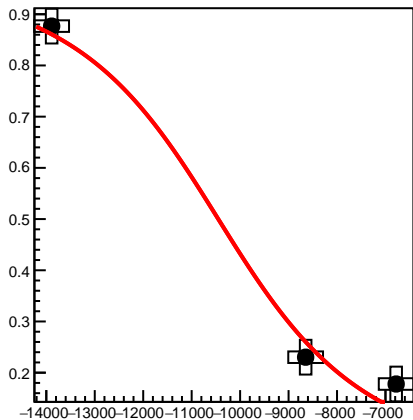
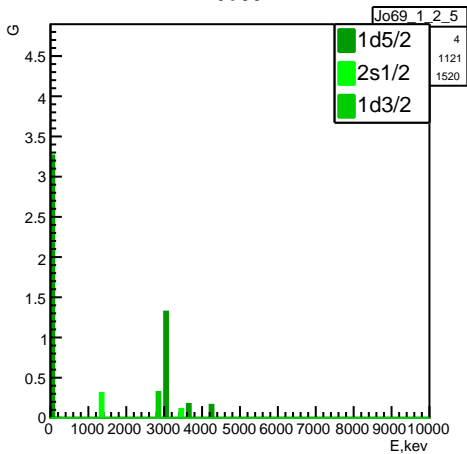
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13889.7 1d5/2 0.876833 0.887

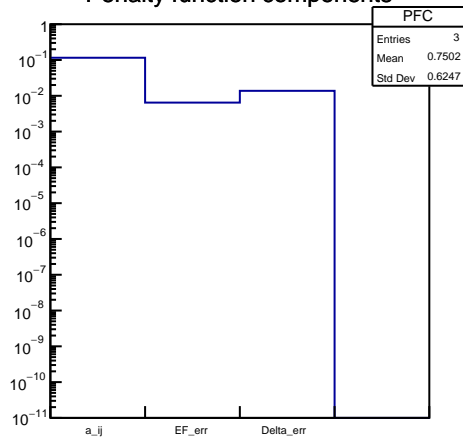
-8647.6 2s1/2 0.23025 0.9605

-6872.47 1d3/2 0.177875 0.80575

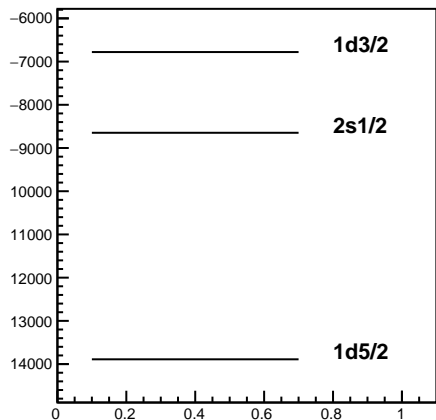
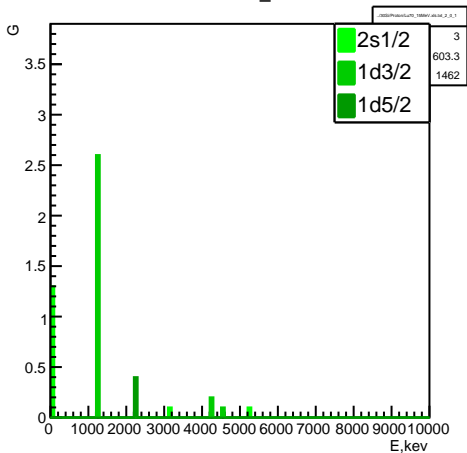
Jo69



Penalty function components



../30Si/Proton/Lu70_15MeV.xls.txt



Experiment: Jo69 (7) ../30Si/Proton/Lu70_15

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10450.9 \pm 528.151 keV Δ : 3298.43 \pm 741.635 keV

penalty: 0.0452655

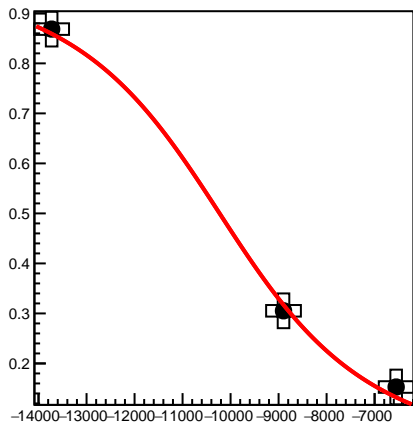
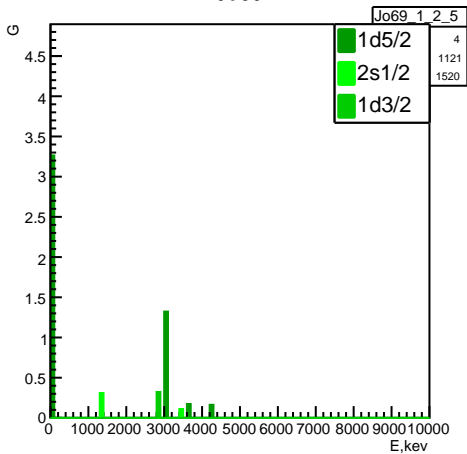
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13889.7 1d5/2 0.876833 0.887

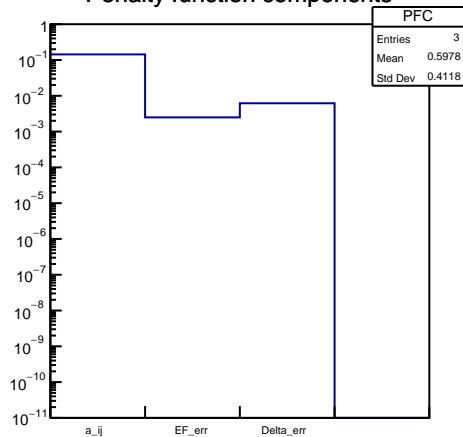
-8647.6 2s1/2 0.23025 0.9605

-6779.57 1d3/2 0.177875 0.80575

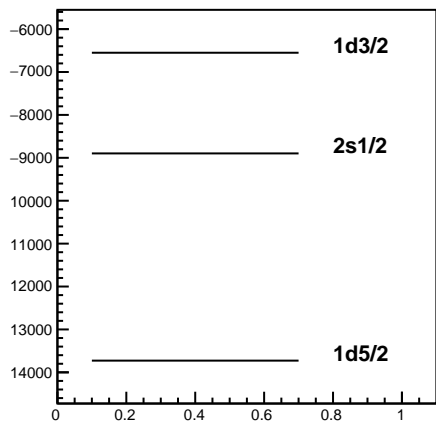
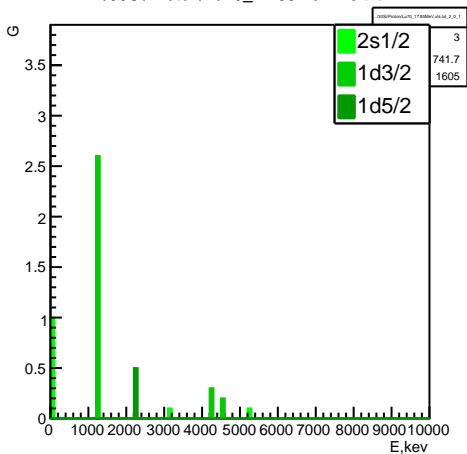
Jo69



Penalty function components



../30Si/Proton/Lu70_17.85MeV.xls.txt



Experiment: Jo69 (7) ../30Si/Proton/Lu70_17

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10228.7 \pm 204.025 \text{ keV}$ $\Delta: 3386.93 \pm 333.438 \text{ keV}$

penalty: 0.0506802

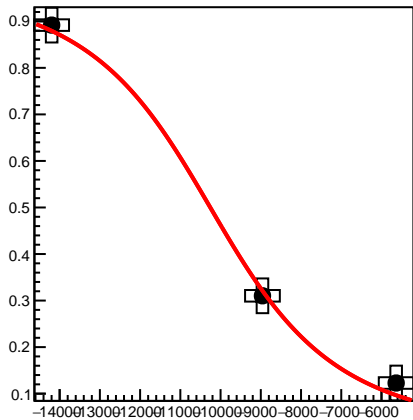
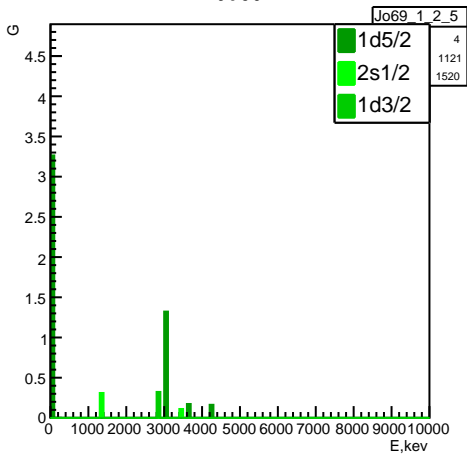
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13727 1d5/2 0.8685 0.903667

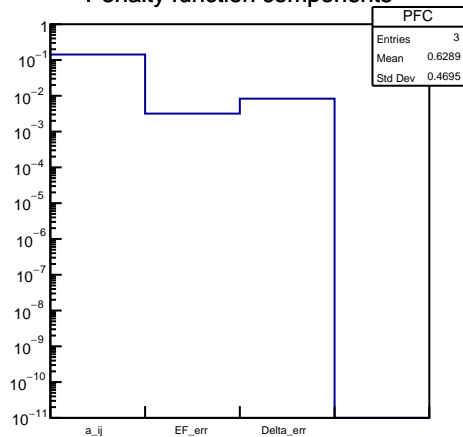
-8897.49 2s1/2 0.30525 0.8105

-6551.19 1d3/2 0.152875 0.85575

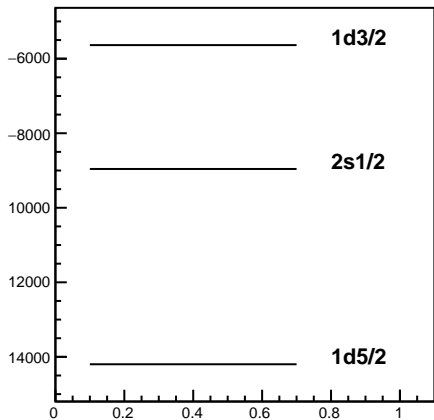
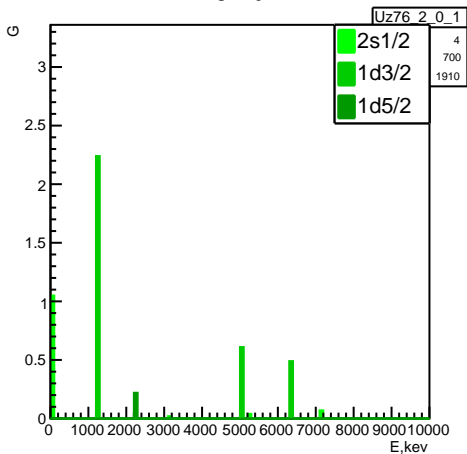
Jo69



Penalty function components



Uz76



Experiment: Jo69 (7) Uz76 (8)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10255.5 \pm 260.255 keV Δ : 3384.22 \pm 448.157 keV

penalty: 0.0512483

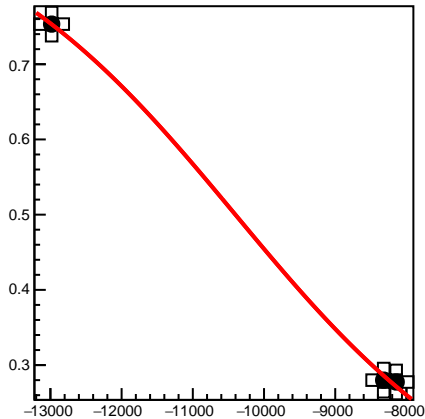
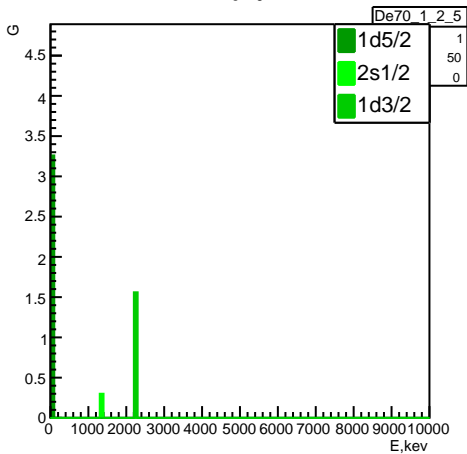
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-14198.7 1d5/2 0.891833 0.857

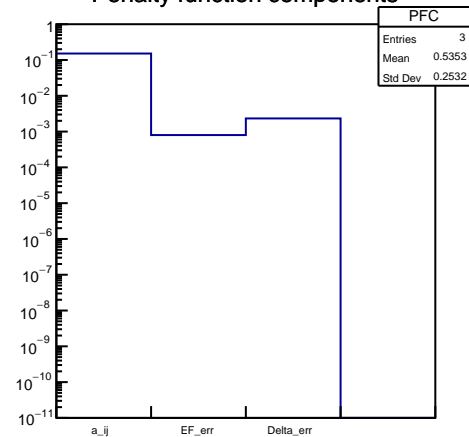
-8958.85 2s1/2 0.31025 0.8005

-5635.5 1d3/2 0.122875 0.91575

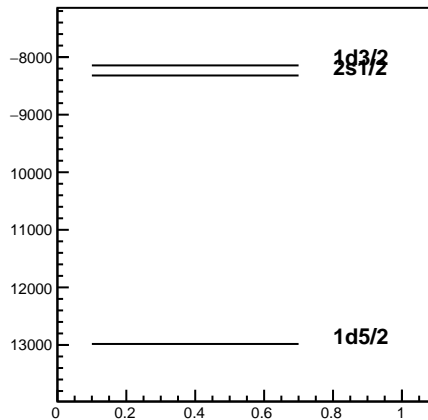
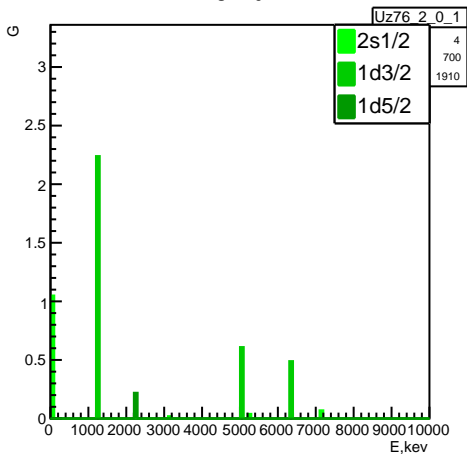
De70



Penalty function components



Uz76



Experiment: De70 (3) Uz76 (8)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10402.2 \pm 65.4591 keV Δ : -4395.98 \pm 125.588 keV

penalty: 0.0515989

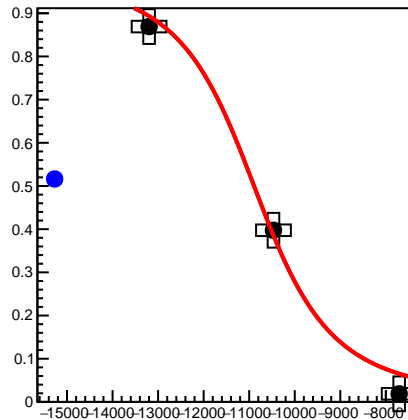
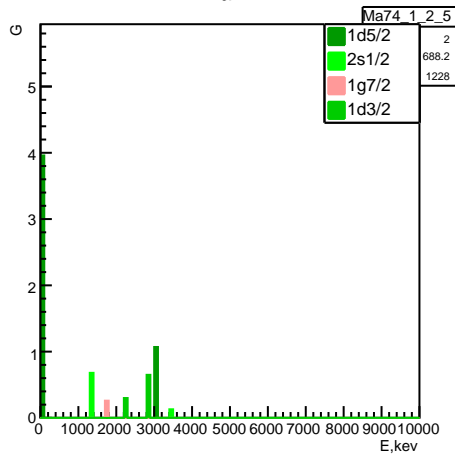
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12982.5 1d5/2 0.753333 0.58

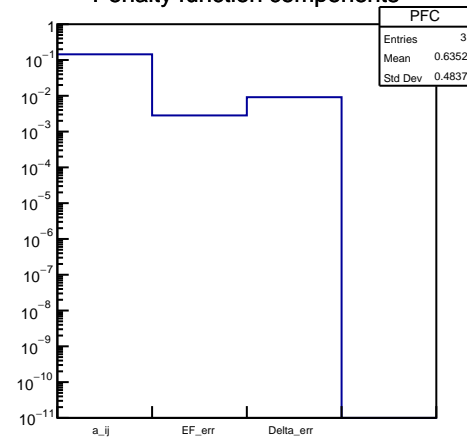
-8319.28 2s1/2 0.28 0.74

-8144.33 1d3/2 0.2775 1.225

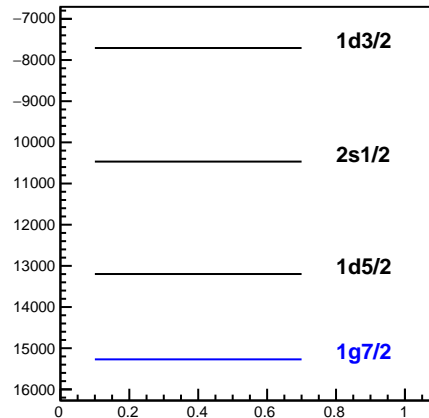
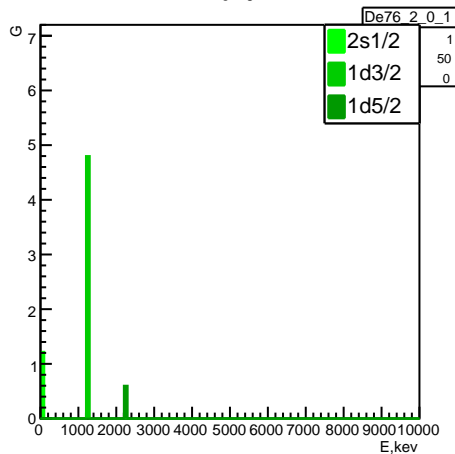
Ma74



Penalty function components



De76



Experiment: Ma74 (7) De76 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10893.6 \pm 231.404 keV Δ : 1810.02 \pm 492.615 keV

penalty: 0.0520447

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

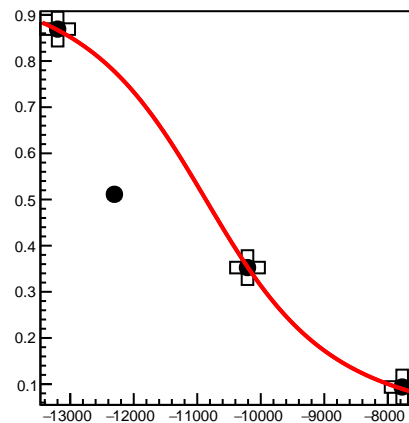
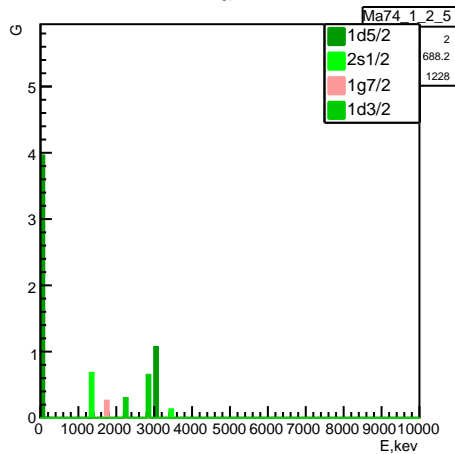
-13197.9 1d5/2 0.869167 0.938333

-10467.2 2s1/2 0.3975 1.015

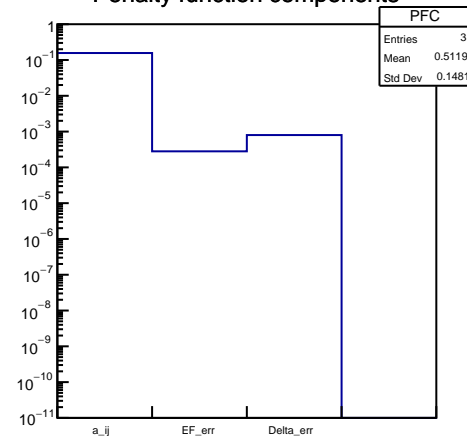
-15271.2 1g7/2 0.51625 0.0325

-7707.95 1d3/2 0.01875 1.4375

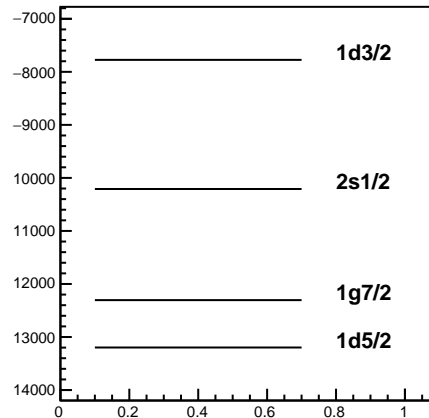
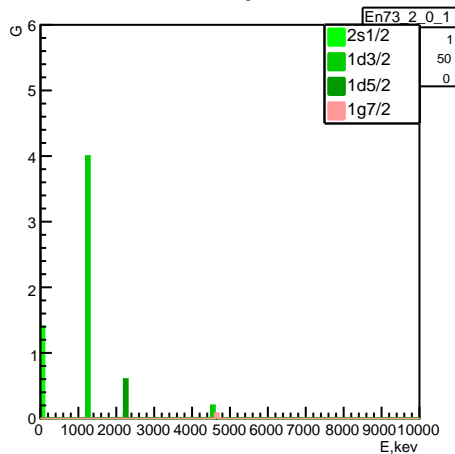
Ma74



Penalty function components



En73



Experiment: Ma74 (7) En73 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10866.5 \pm 22.9728 \text{ keV}$ $\Delta: -2154.46 \pm 43.1113 \text{ keV}$

penalty: 0.0525824

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

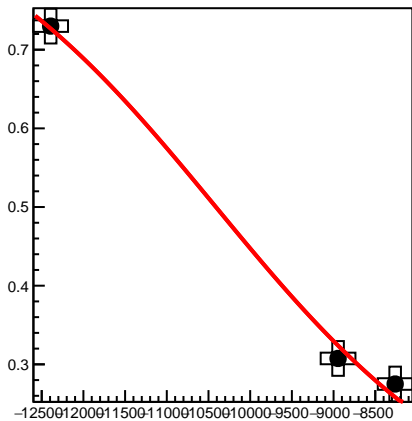
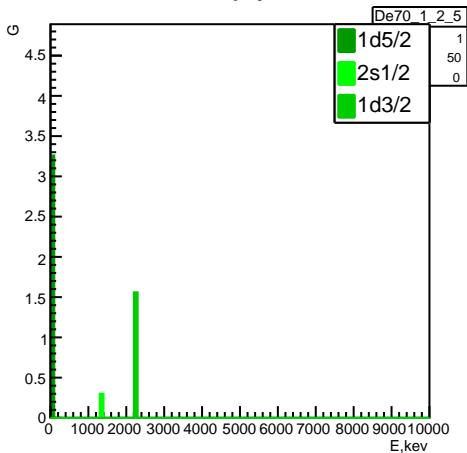
-13197.9 1d5/2 0.869167 0.938333

-10209 2s1/2 0.3525 1.105

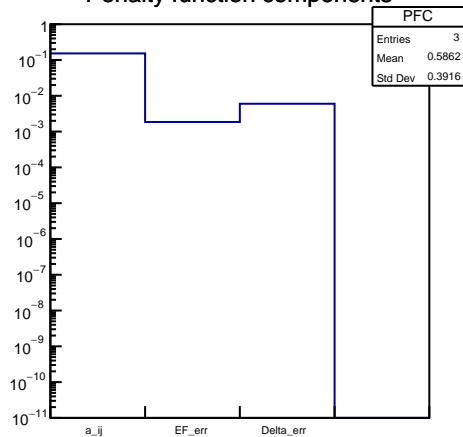
-12304.6 1g7/2 0.51125 0.0425

-7774.13 1d3/2 0.09375 1.2875

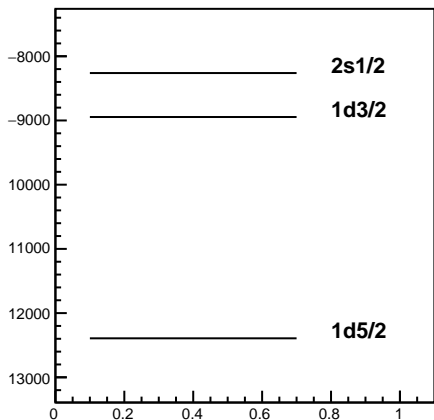
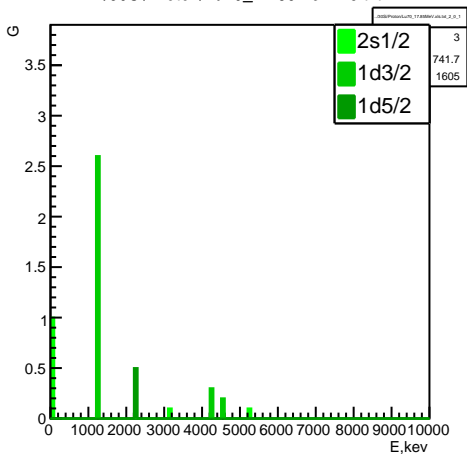
De70



Penalty function components



../30Si/Proton/Lu70_17.85MeV.xls.txt



Experiment: De70 (3) ../30Si/Proton/Lu70_17
proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10411 ± 151.706 keV

Δ: 3892.47 ± 323.027 keV

penalty: 0.0535416

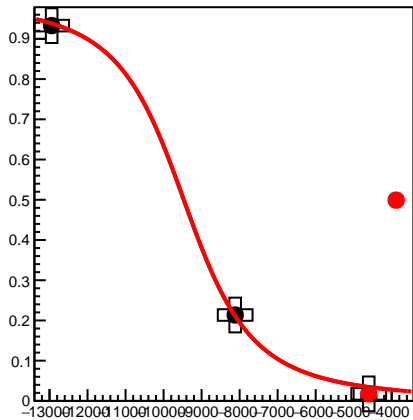
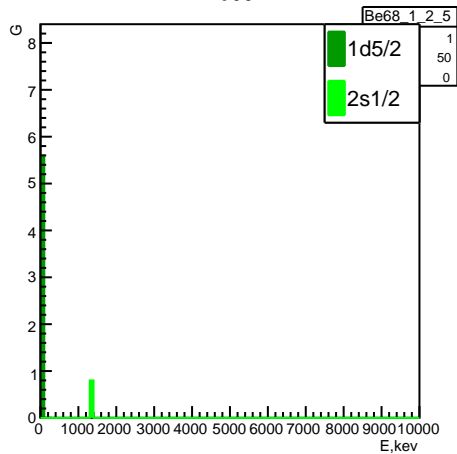
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12392.8 1d5/2 0.73 0.626667

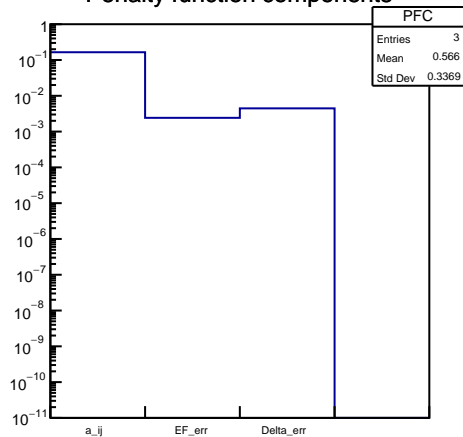
-8261.5 2s1/2 0.275 0.75

-8946.16 1d3/2 0.3075 1.165

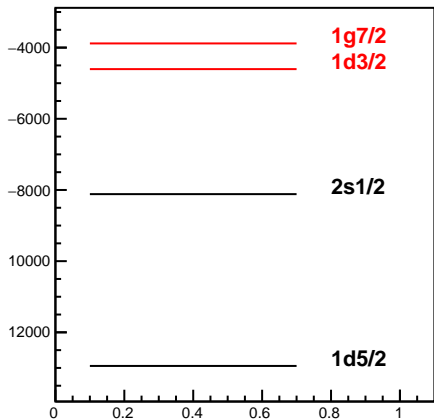
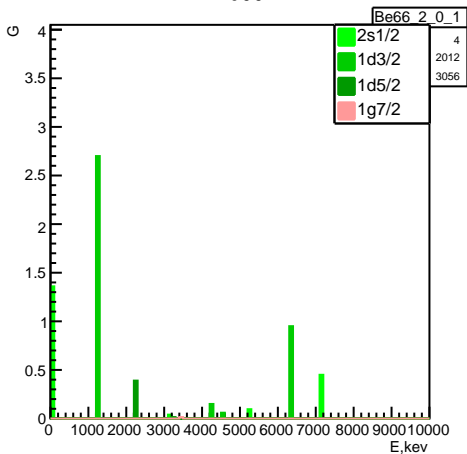
Be68



Penalty function components



Be66



Experiment: Be68 (2) Be66 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -9469.01 \pm 198.271 \text{ keV}$ $\Delta: 1907.67 \pm 240.059 \text{ keV}$

penalty: 0.0572331

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

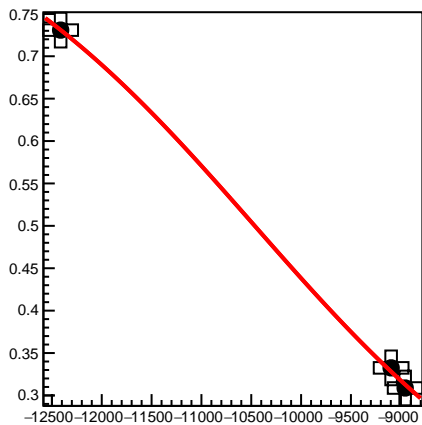
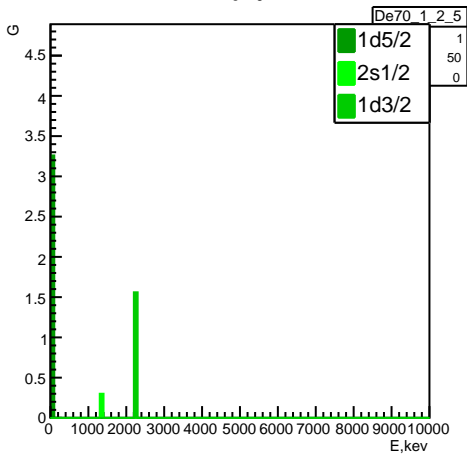
-12944.1 1d5/2 0.932917 1.00083

-8116.94 2s1/2 0.2135 1.373

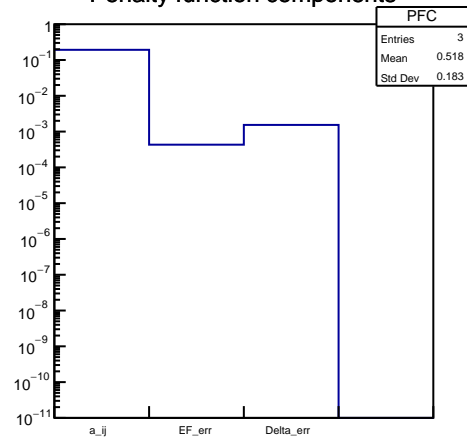
-4604.34 1d3/2 0.0175 0.965

-3882.72 1g7/2 0.499063 0.001875

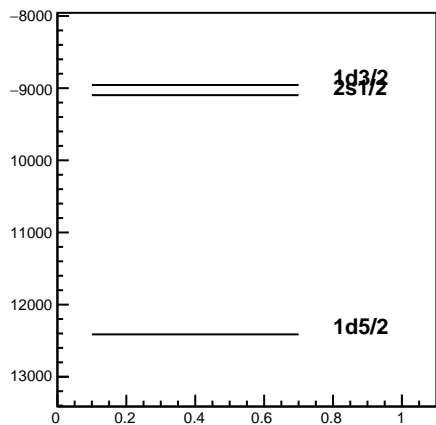
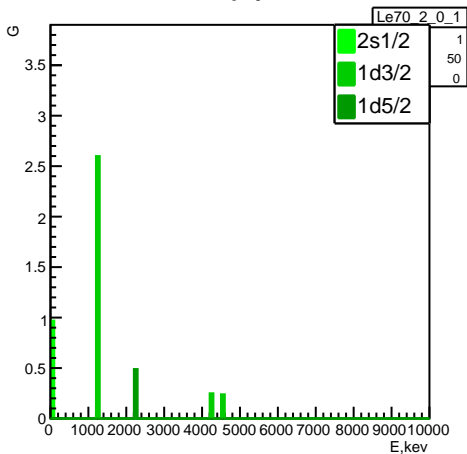
De70



Penalty function components



Le70



Experiment: De70 (3) Le70 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10465.3 \pm 35.2443 keV Δ : 3738.44 \pm 82.7509 keV

penalty: 0.064822

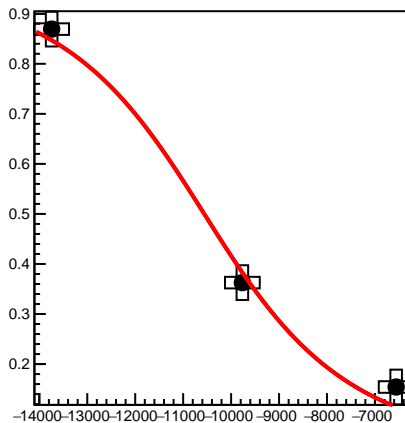
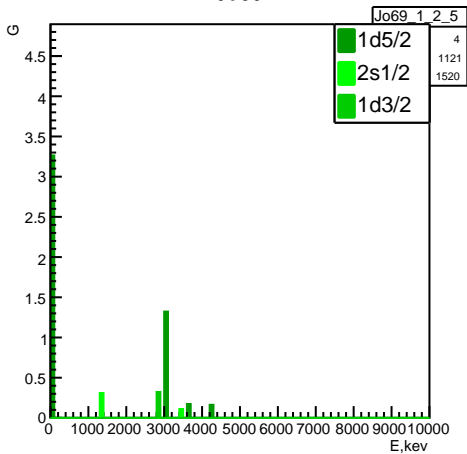
SPE, keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12412.4 1d5/2 0.730833 0.625

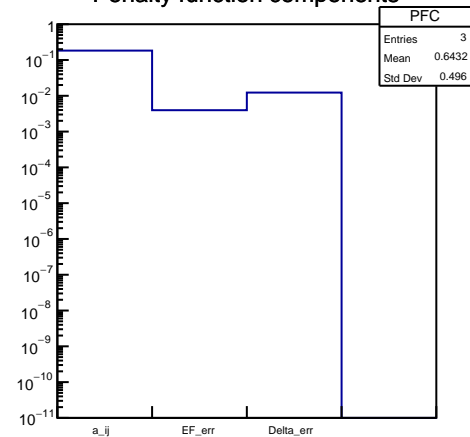
-9096.77 2s1/2 0.3325 0.635

-8956.02 1d3/2 0.30875 1.1625

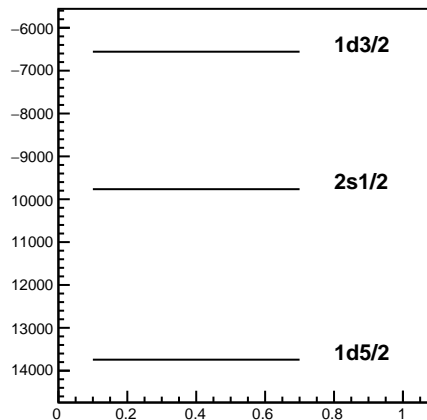
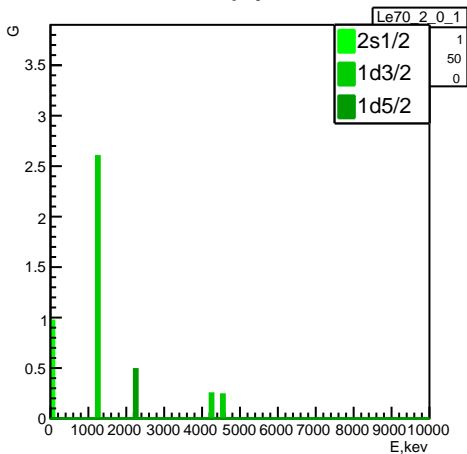
Jo69



Penalty function components



Le70



Experiment: Jo69 (7) Le70 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10559.8 \pm 324.052 \text{ keV}$ $\Delta: -3300.21 \pm 662.6 \text{ keV}$

penalty: 0.0664455

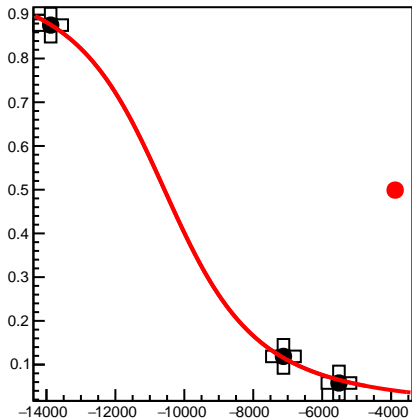
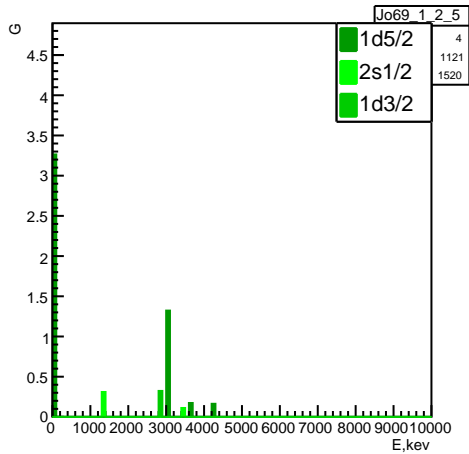
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13743 1d5/2 0.869333 0.902

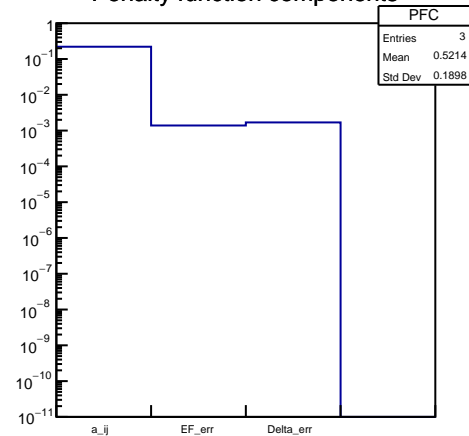
-9765.26 2s1/2 0.36275 0.6955

-6557.6 1d3/2 0.154125 0.85325

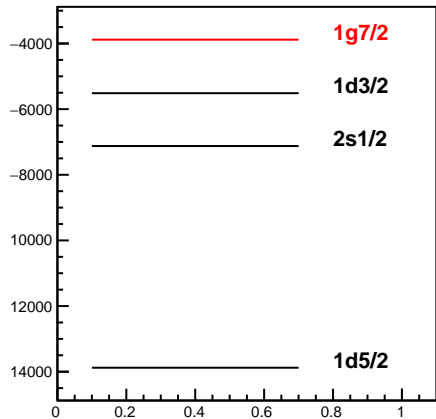
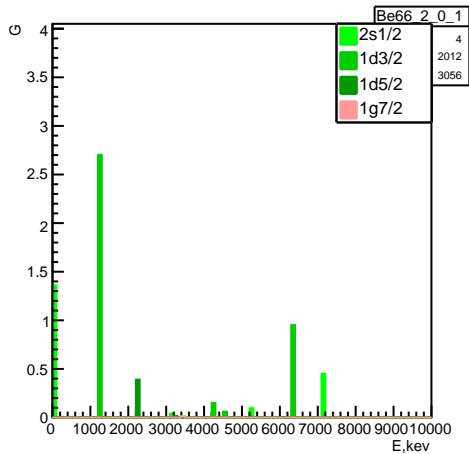
Jo69



Penalty function components



Be66



Experiment: Jo69 (7) Be66 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10577.4 \pm 113.548 keV Δ : 2870.25 \pm 91.1176 keV

penalty: 0.0744461

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

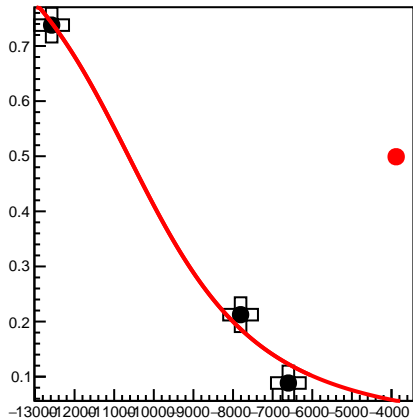
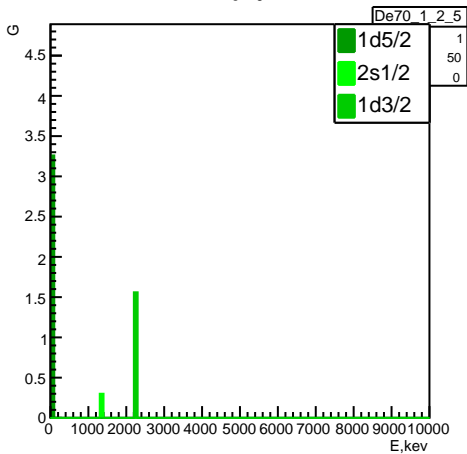
-13878.5 1d5/2 0.876417 0.887833

-7123.88 2s1/2 0.11875 1.1835

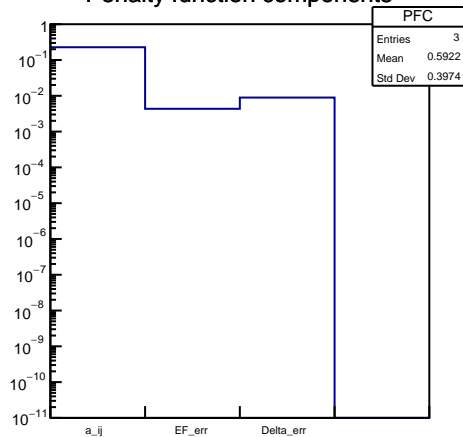
-5513.83 1d3/2 0.057875 1.04575

-3882.72 1g7/2 0.499063 0.001875

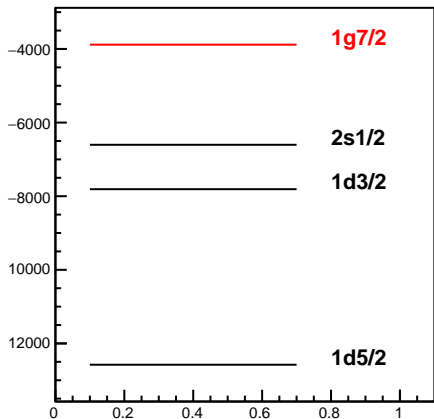
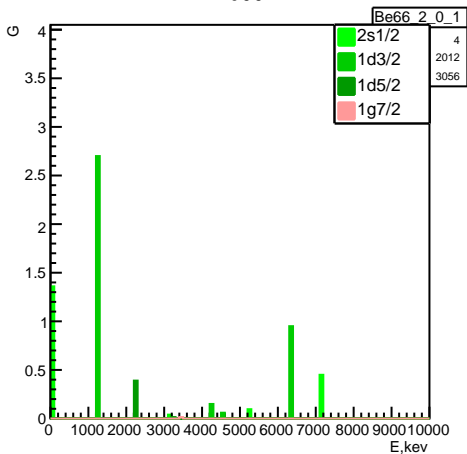
De70



Penalty function components



Be66



Experiment: De70 (3) Be66 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10636.1 \pm 354.768 \text{ keV}$ $\Delta: 3511.25 \pm 481.114 \text{ keV}$

penalty: 0.0801947

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

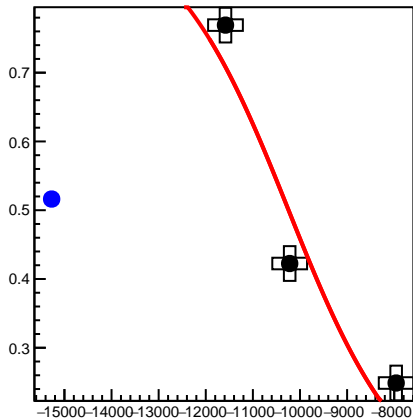
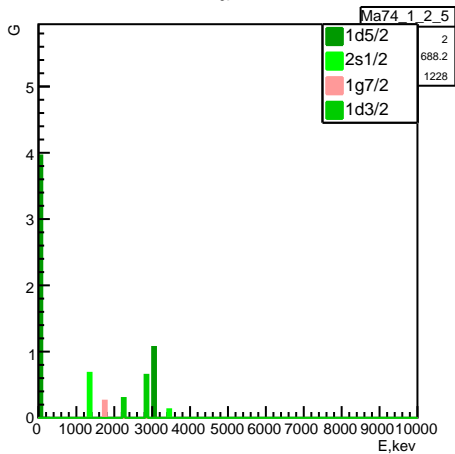
-12578.4 1d5/2 0.737917 0.610833

-6603.58 2s1/2 0.0885 1.123

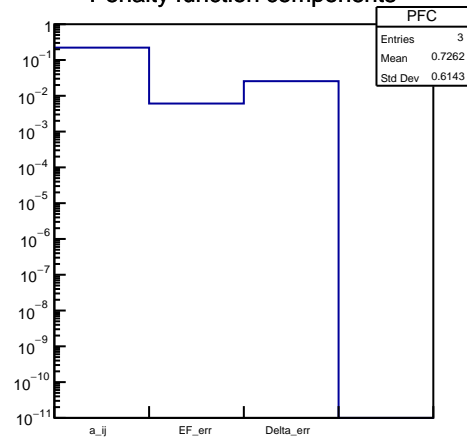
-7809.73 1d3/2 0.2125 1.355

-3882.72 1g7/2 0.499063 0.001875

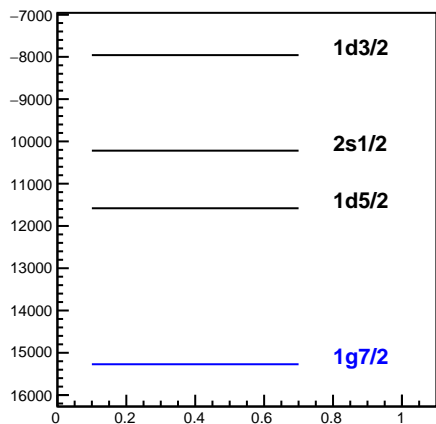
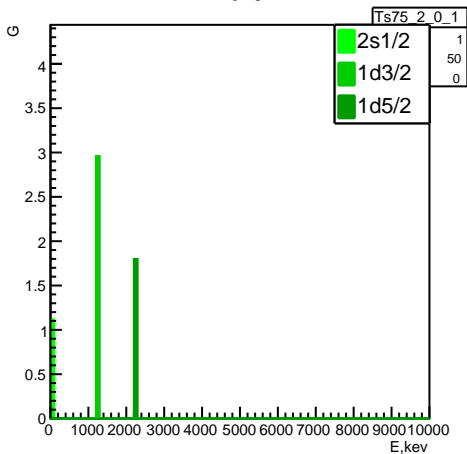
Ma74



Penalty function components



Ts75



Experiment: Ma74 (7) Ts75 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10242.1 \pm 497.219 keV Δ : 2925.25 \pm 1381.01 keV

penalty: 0.084455

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

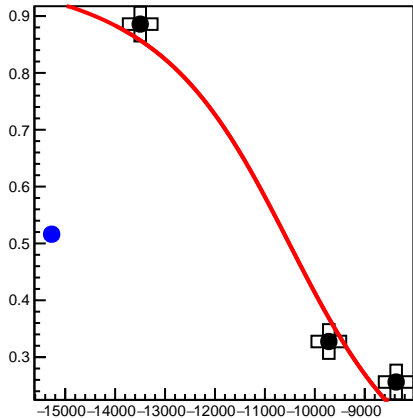
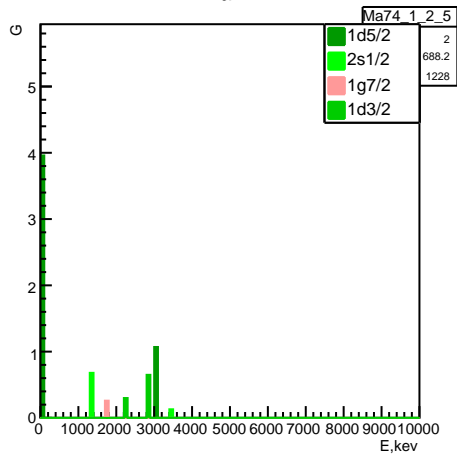
-11581.5 1d5/2 0.769167 1.13833

-10219 2s1/2 0.4225 0.965

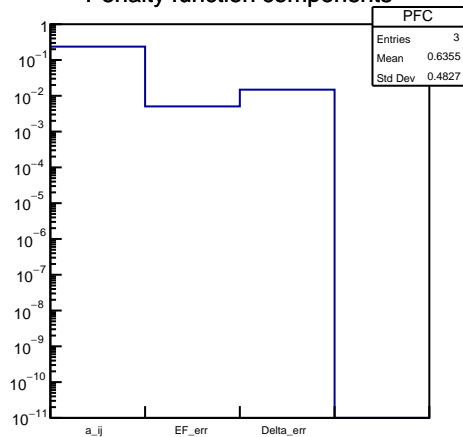
-15271.2 1g7/2 0.51625 0.0325

-7958.97 1d3/2 0.24875 0.9775

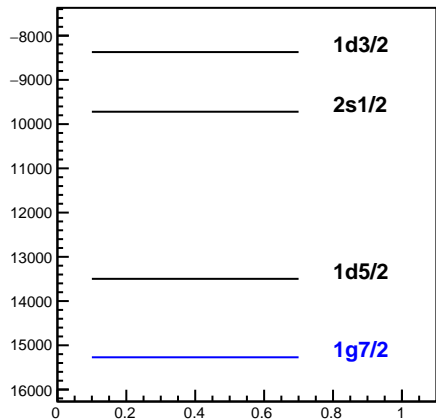
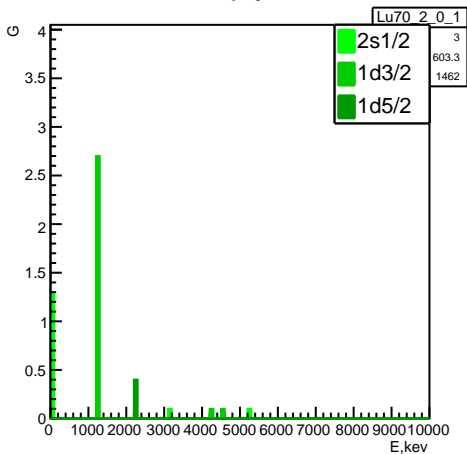
Ma74



Penalty function components



Lu70



Experiment: Ma74 (7) Lu70 (7)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10514 \pm 413.298 keV Δ : 2919.6 \pm 799.38 keV

penalty: 0.0853771

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

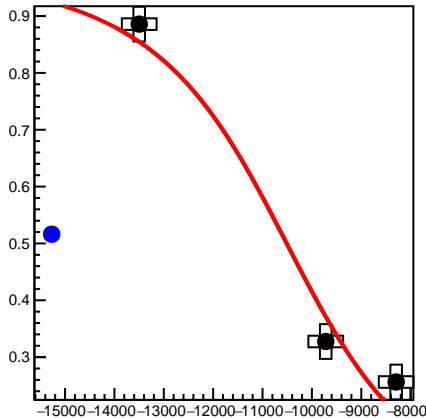
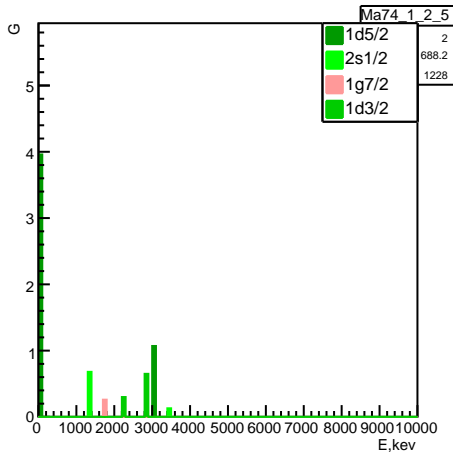
-13497.5 1d5/2 0.885833 0.905

-9719.75 2s1/2 0.3275 1.155

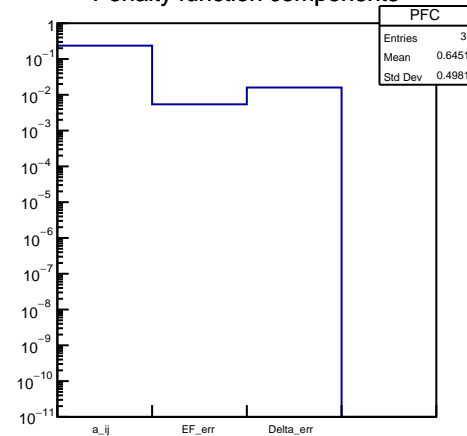
-15271.2 1g7/2 0.51625 0.0325

-8371.27 1d3/2 0.25625 0.9625

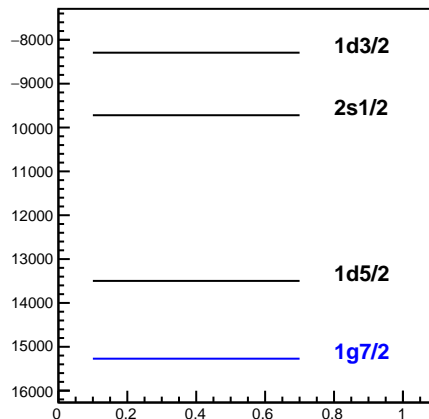
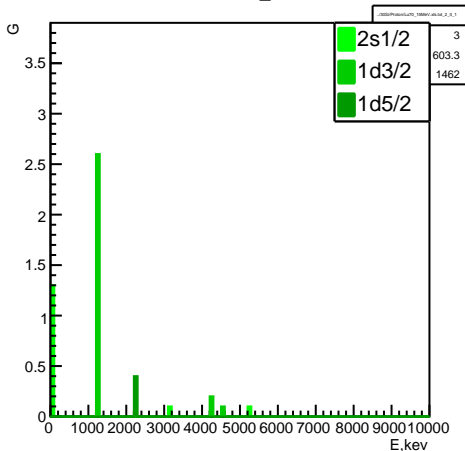
Ma74



Penalty function components



../30Si/Proton/Lu70_15MeV.xls.txt



Experiment: Ma74 (7) ../30Si/Proton/Lu70_15
proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10511.2 \pm 443.313 keV

Δ : -2967.15 \pm 861.236 keV

penalty: 0.0858819

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

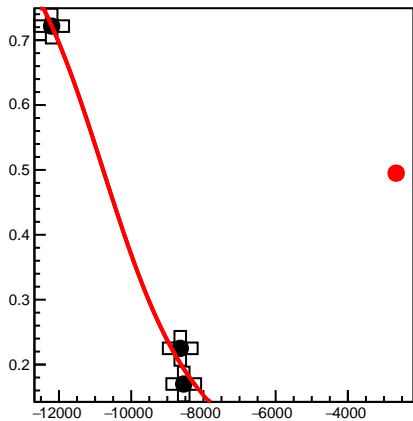
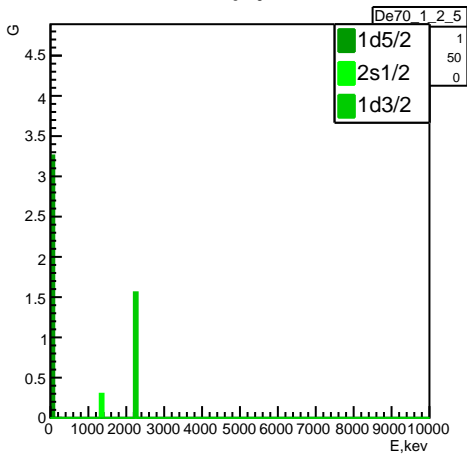
-13497.5 1d5/2 0.885833 0.905

-9719.75 2s1/2 0.3275 1.155

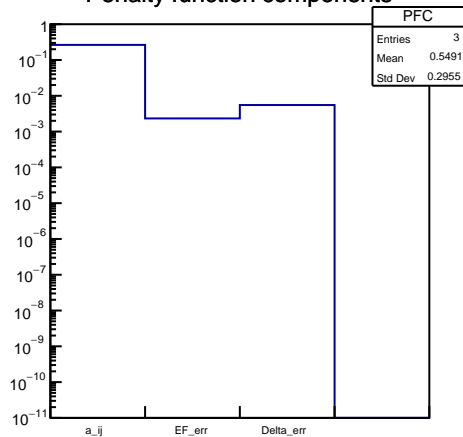
-15271.2 1g7/2 0.51625 0.0325

-8293.5 1d3/2 0.25625 0.9625

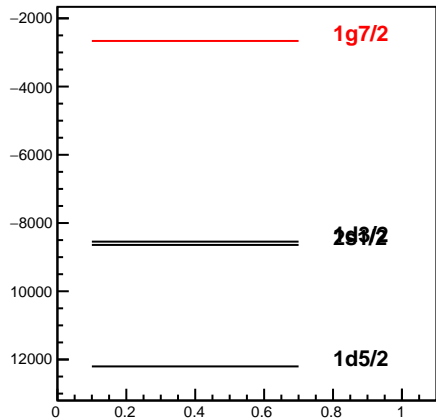
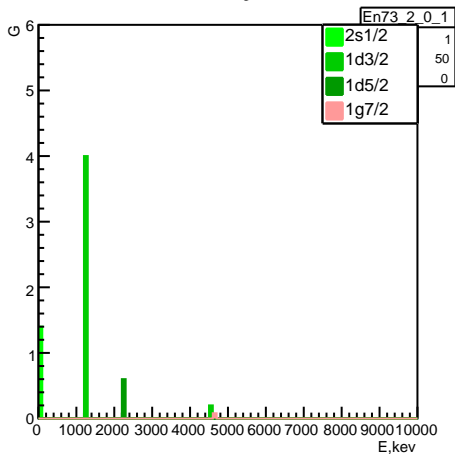
De70



Penalty function components



En73



Experiment: De70 (3) En73 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10776.8 \pm 190.753 \text{ keV}$ $\Delta: -2876.38 \pm 297.438 \text{ keV}$

penalty: 0.090672

SPE, keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

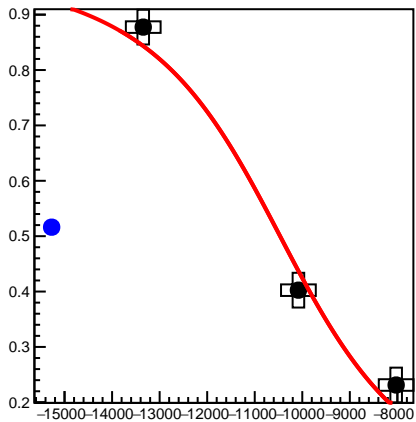
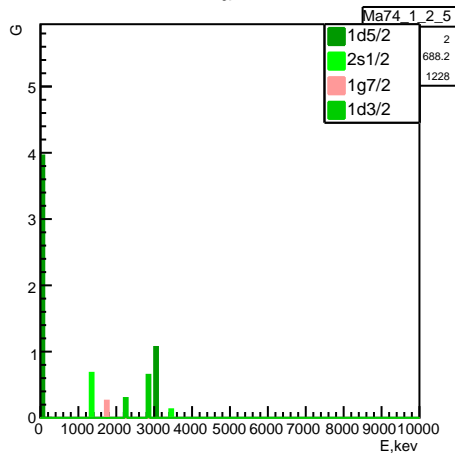
-12202.9 1d5/2 0.721667 0.643333

-8641.61 2s1/2 0.225 0.85

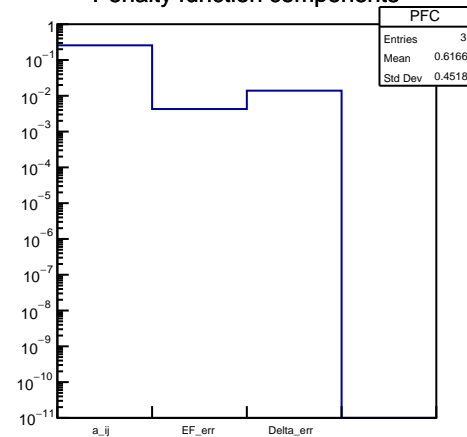
-8545.44 1d3/2 0.17 1.44

-2663.12 1g7/2 0.495 0.01

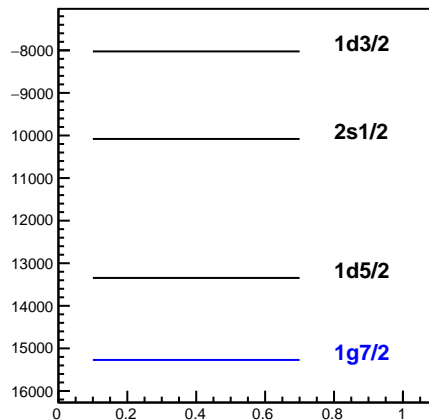
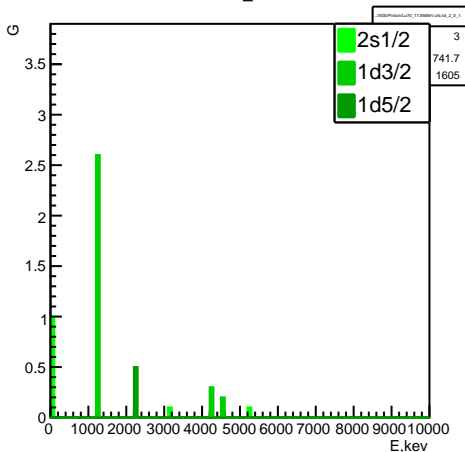
Ma74



Penalty function components



../30Si/Proton/Lu70_17.85MeV.xls.txt



Experiment: Ma74 (7) ../30Si/Proton/Lu70_17

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10466.5 \pm 349.182 keV Δ : 3046.33 \pm 750.079 keV

penalty: 0.0917556

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

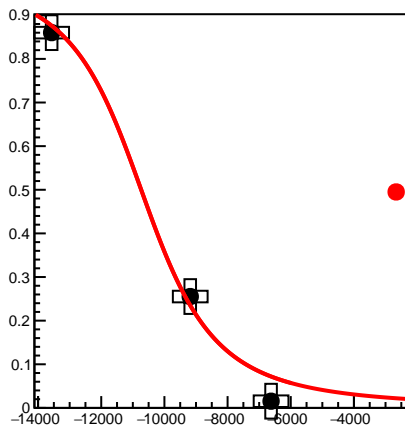
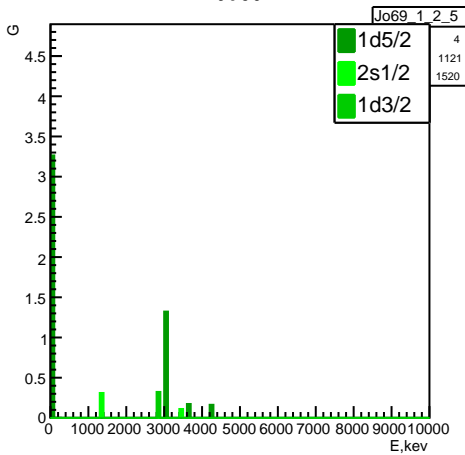
-13345 1d5/2 0.8775 0.921667

-10081.3 2s1/2 0.4025 1.005

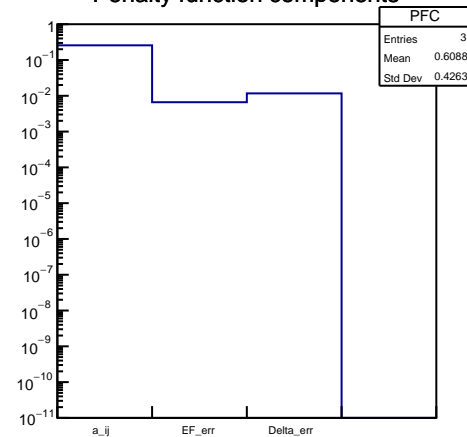
-15271.2 1g7/2 0.51625 0.0325

-8025.72 1d3/2 0.23125 1.0125

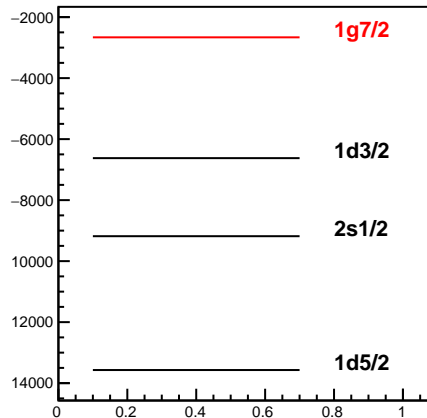
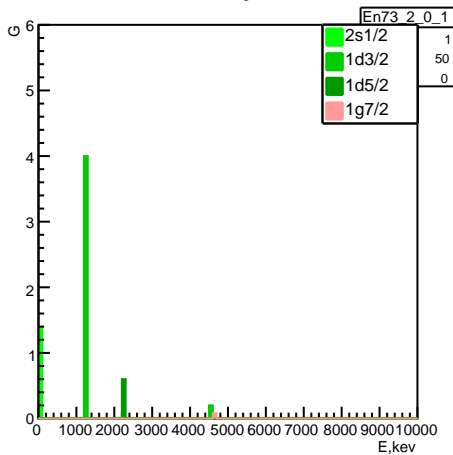
Jo69



Penalty function components



En73



Experiment: Jo69 (7) En73 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10735.2 \pm 541.478 \text{ keV}$ $\Delta: 2483.38 \pm 629.27 \text{ keV}$

penalty: 0.0917984

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

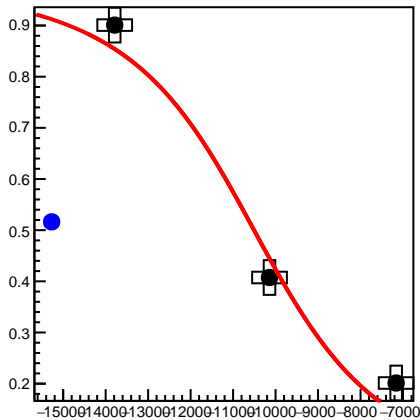
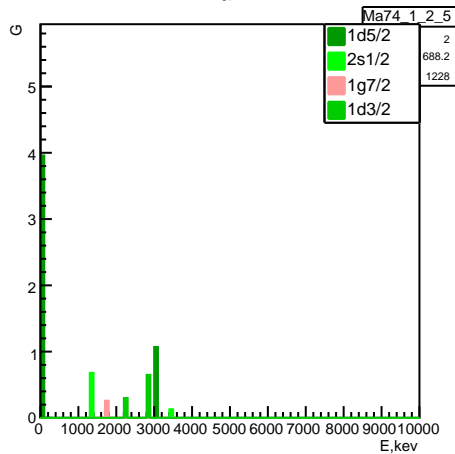
-13570.1 1d5/2 0.860167 0.920333

-9182.5 2s1/2 0.25525 0.9105

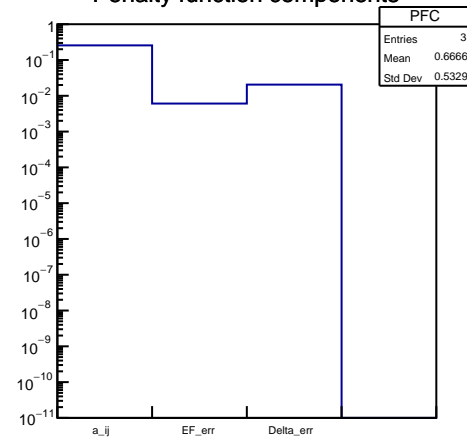
-6623.33 1d3/2 0.015375 1.13075

-2663.12 1g7/2 0.495 0.01

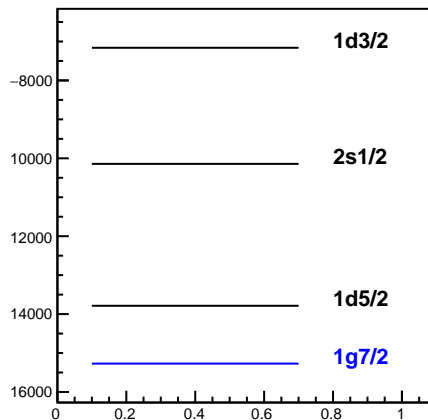
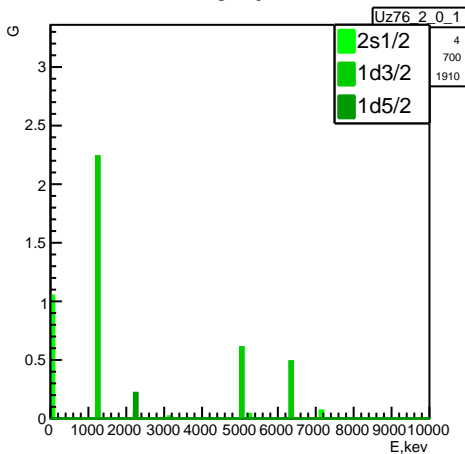
Ma74



Penalty function components



Uz76



Experiment: Ma74 (7) Uz76 (8)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10506.4 \pm 496.773 keV Δ : 3269.83 \pm 1106.28 keV

penalty: 0.0942819

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

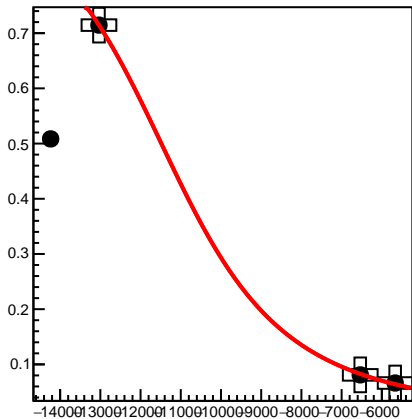
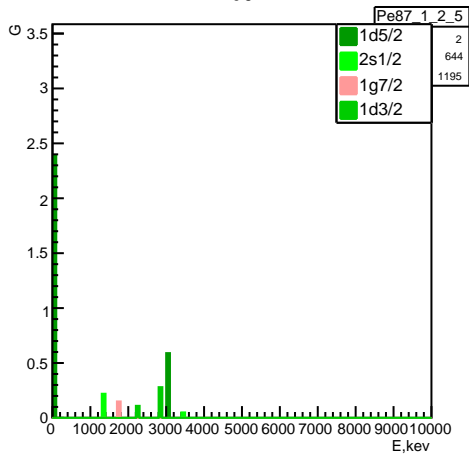
-13786.7 1d5/2 0.900833 0.875

-10142.6 2s1/2 0.4075 0.995

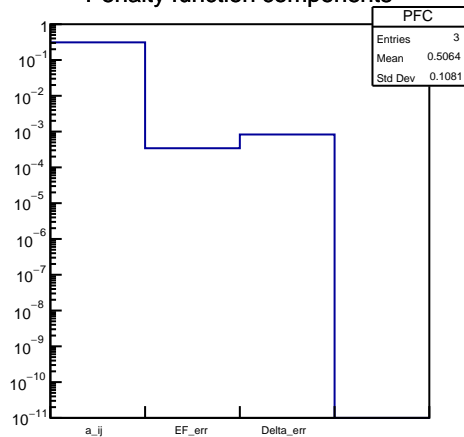
-15271.2 1g7/2 0.51625 0.0325

-7161.36 1d3/2 0.20125 1.0725

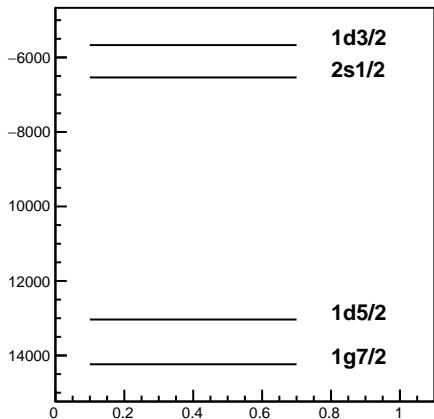
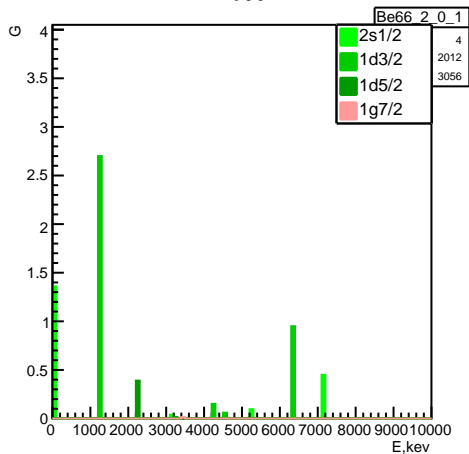
Pe87



Penalty function components



Be66



Experiment: Pe87 (7) Be66 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -11482.6 \pm 28.047 keV Δ : 3266.05 \pm 44.6937 keV

penalty: 0.104116

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

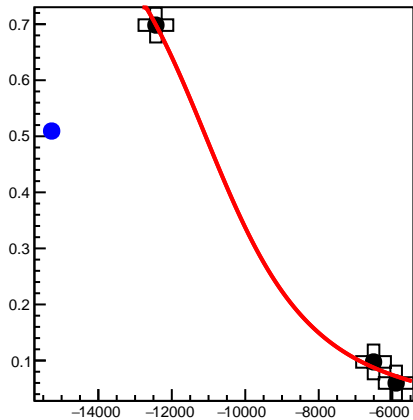
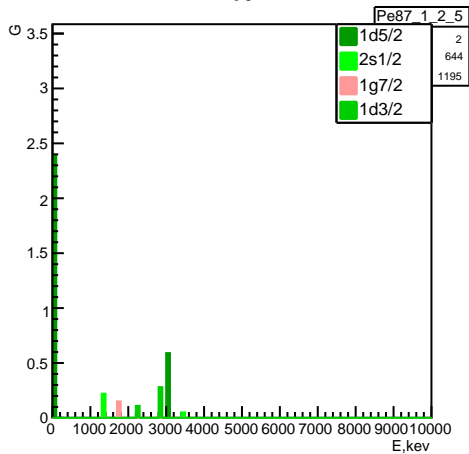
-13034.5 1d5/2 0.714583 0.564167

-6536.98 2s1/2 0.081 1.108

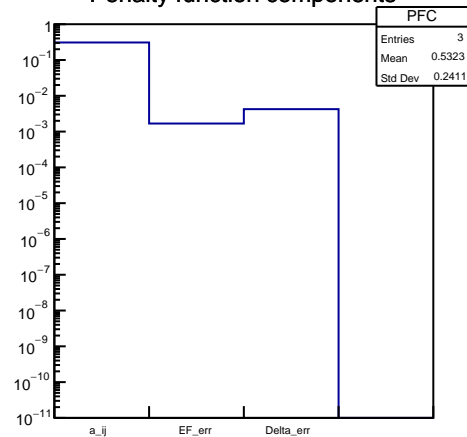
-14235.9 1g7/2 0.508437 0.020625

-5668.56 1d3/2 0.06625 1.0625

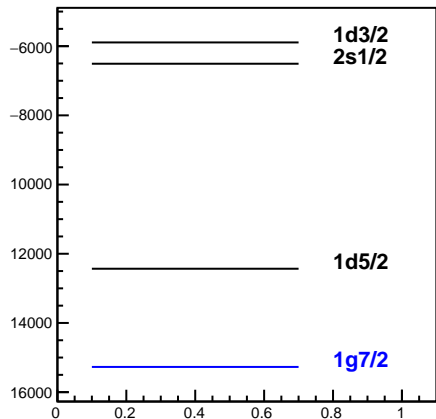
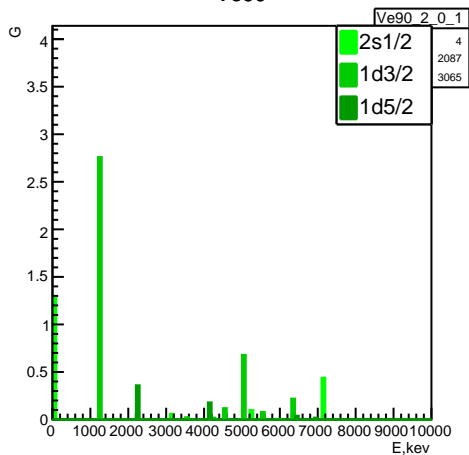
Pe87



Penalty function components



Ve90



Experiment: Pe87 (7) Ve90 (16)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -11077.8 \pm 137.413 keV Δ : 3129.51 \pm 228.19 keV

penalty: 0.104832

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

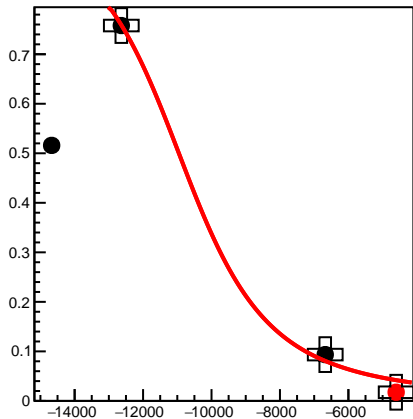
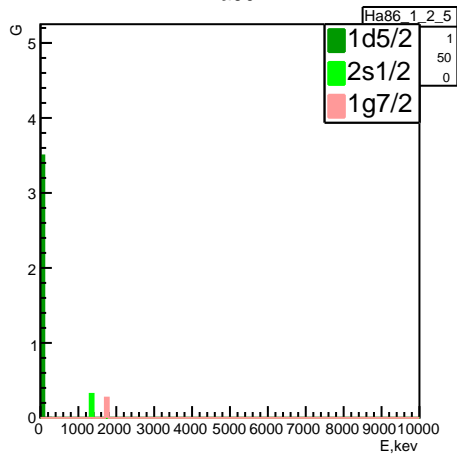
-12432.9 1d5/2 0.698333 0.596667

-6507.91 2s1/2 0.0975 1.075

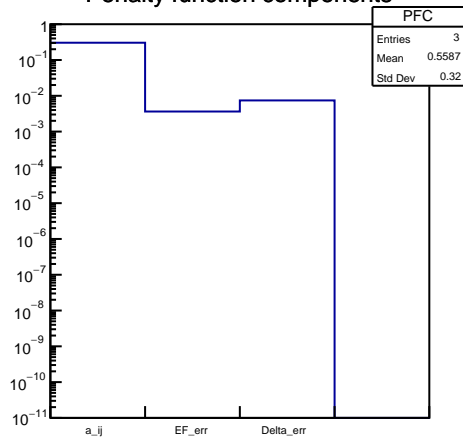
-15271.2 1g7/2 0.509375 0.01875

-5892.34 1d3/2 0.059875 1.07525

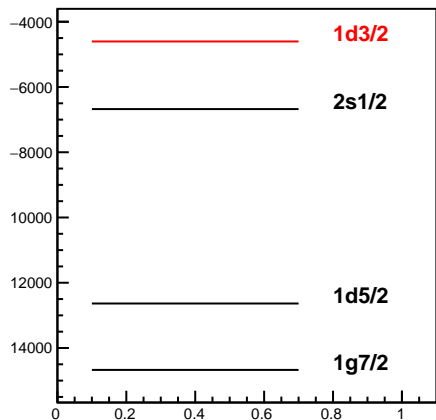
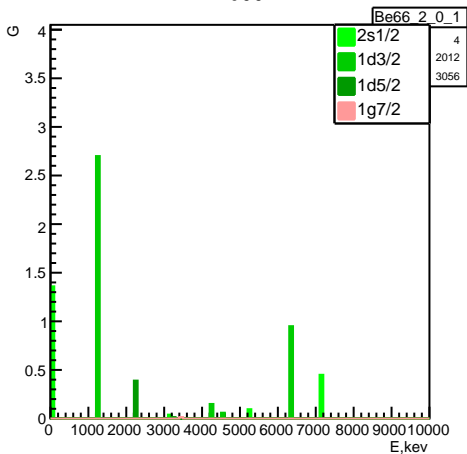
Ha86



Penalty function components



Be66



Experiment: Ha86 (3) Be66 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10954.1 \pm 297.577 \text{ keV}$ $\Delta: -2777.18 \pm 400.036 \text{ keV}$

penalty: 0.104981

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

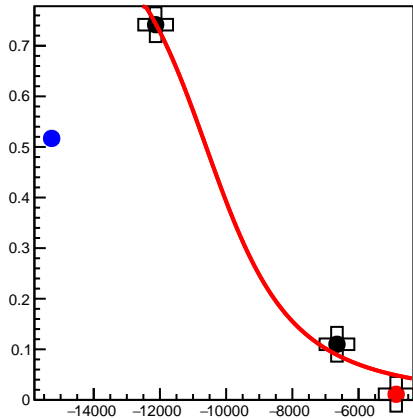
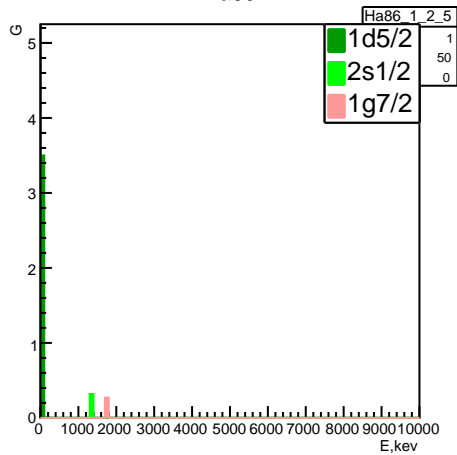
-12636.1 1d5/2 0.757917 0.650833

-6676.94 2s1/2 0.0935 1.133

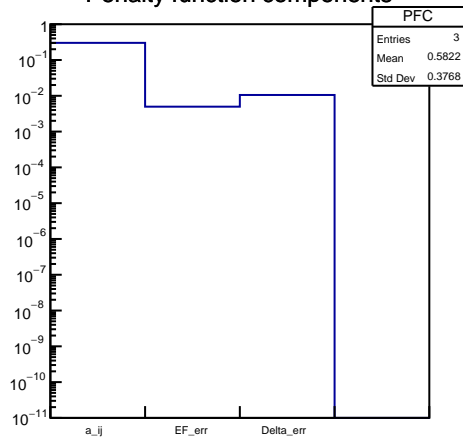
-14671.8 1g7/2 0.515937 0.035625

-4604.34 1d3/2 0.0175 0.965

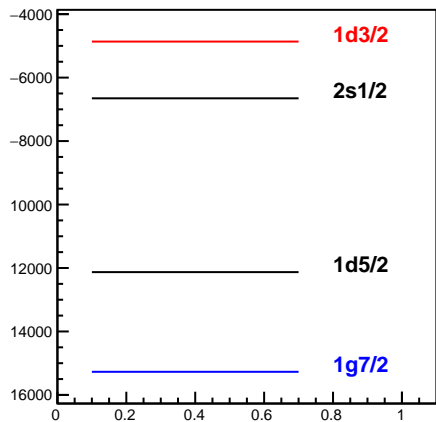
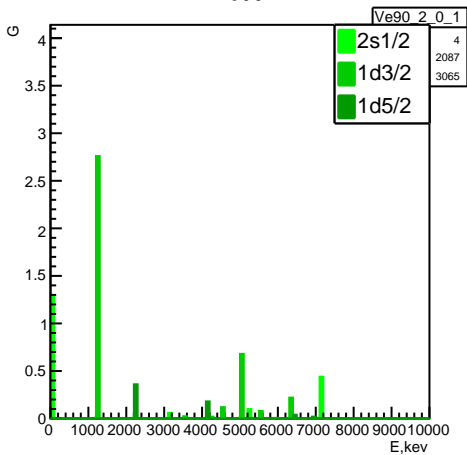
Ha86



Penalty function components



Ve90



Experiment: Ha86 (3) Ve90 (16)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10603.4 \pm 406.388 \text{ keV}$ $\Delta: -2736.26 \pm 567.961 \text{ keV}$

penalty: 0.105598

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

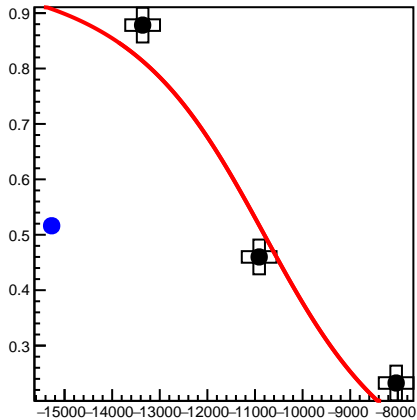
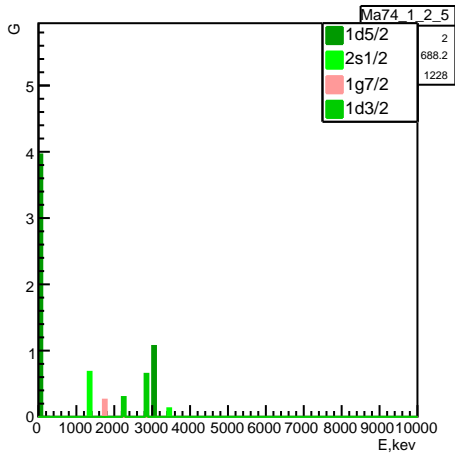
-12129.8 1d5/2 0.741667 0.683333

-6652.73 2s1/2 0.11 1.1

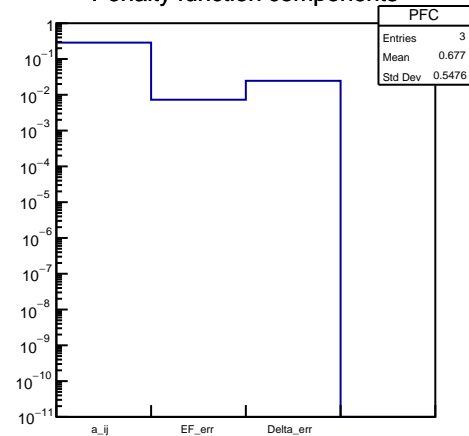
-15271.2 1g7/2 0.516875 0.03375

-4864.31 1d3/2 0.011125 0.97775

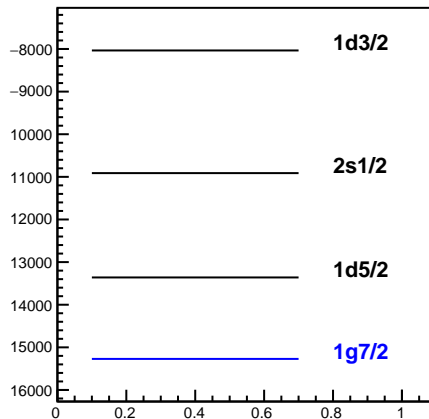
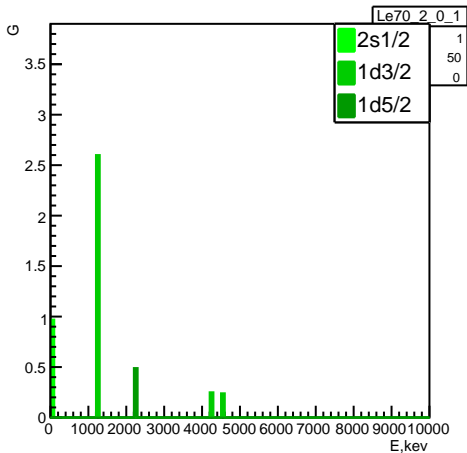
Ma74



Penalty function components



Le70



Experiment: Ma74 (7) Le70 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10803.8 \pm 596.234 \text{ keV}$ $\Delta: -3177.07 \pm 1324.14 \text{ keV}$

penalty: 0.106243

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

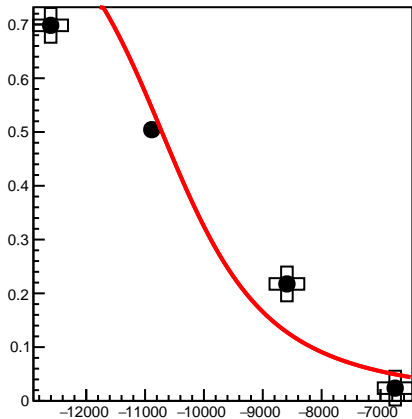
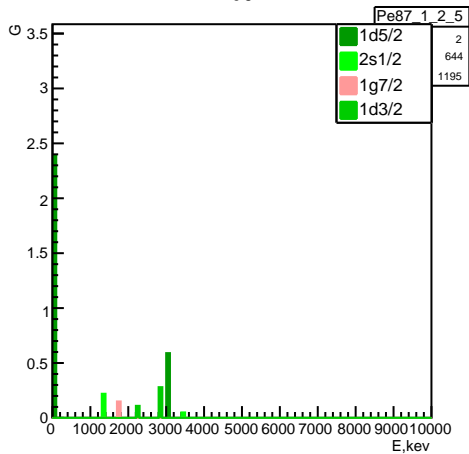
-13360 1d5/2 0.878333 0.92

-10912.4 2s1/2 0.46 0.89

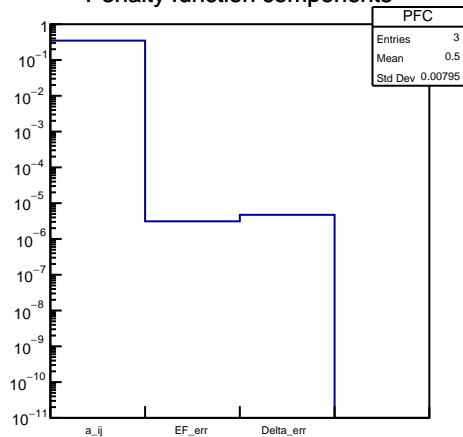
-15271.2 1g7/2 0.51625 0.0325

-8034.78 1d3/2 0.2325 1.01

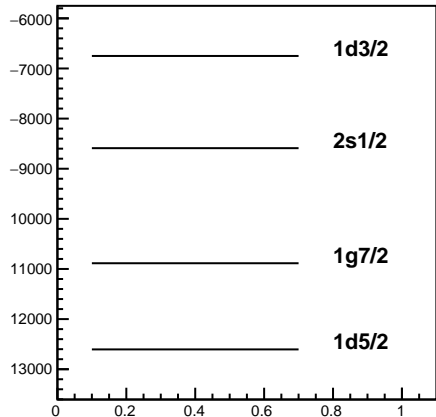
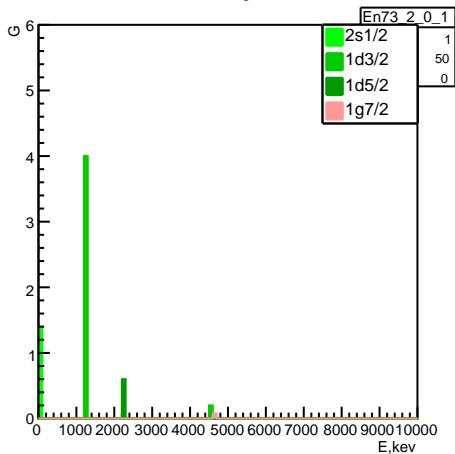
Pe87



Penalty function components



En73



Experiment: Pe87 (7) En73 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10714 \pm 0.254478 \text{ keV}$ $\Delta: -1905.27 \pm 0.254478 \text{ keV}$

penalty: 0.11601

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

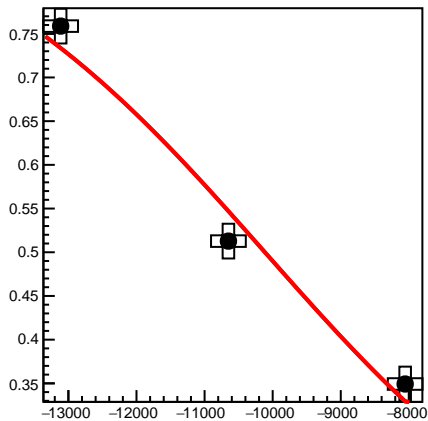
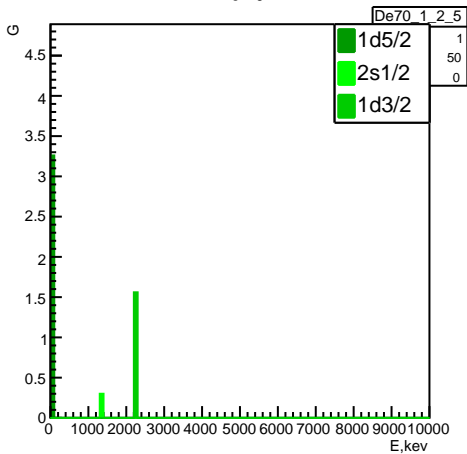
-12604.8 1d5/2 0.698333 0.596667

-8589.85 2s1/2 0.2175 0.835

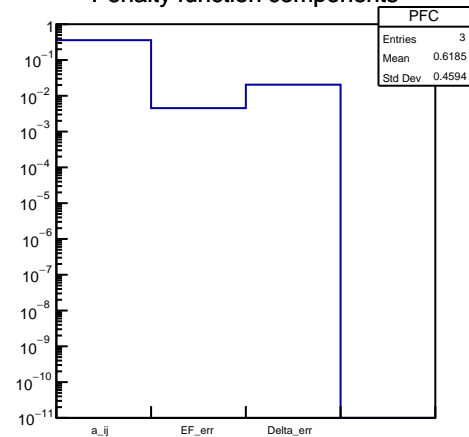
-10885.8 1g7/2 0.504375 0.02875

-6750.41 1d3/2 0.02375 1.1475

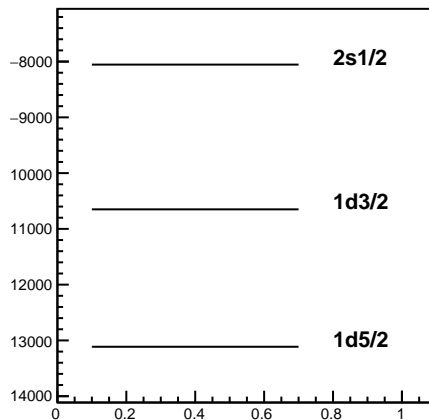
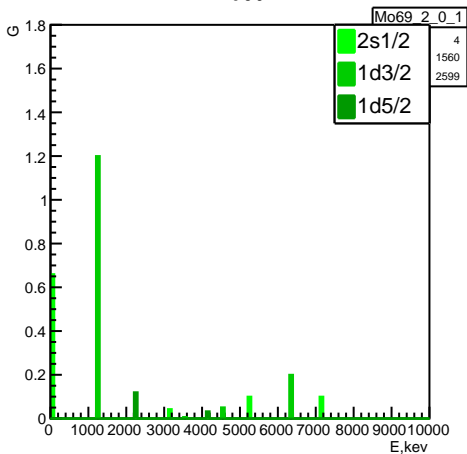
De70



Penalty function components



Mo69



Experiment: De70 (3) Mo69 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10113.9 \pm 369.937 keV Δ : 5675.11 \pm 1101.53 keV

penalty: 0.127745

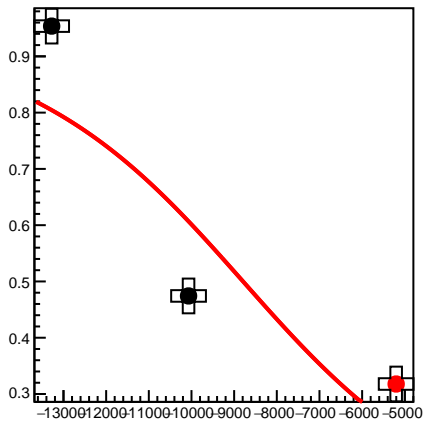
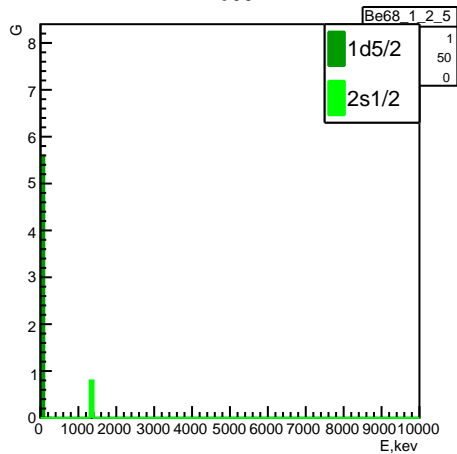
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13113.7 1d5/2 0.75875 0.569167

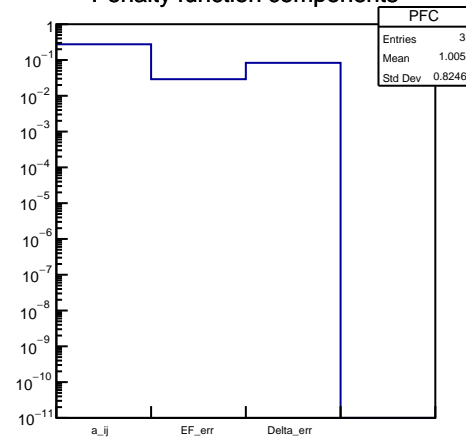
-8054.44 2s1/2 0.34925 0.6015

-10649.8 1d3/2 0.51275 0.7545

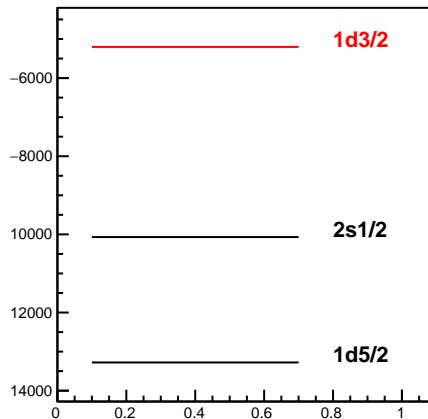
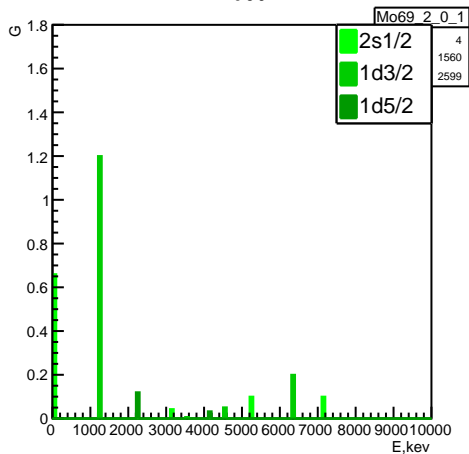
Be68



Penalty function components



Mo69



Experiment: Be68 (2) Mo69 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -8790.88 \pm 2382.02 keV Δ : -5843.5 \pm 4487.77 keV

penalty: 0.129105

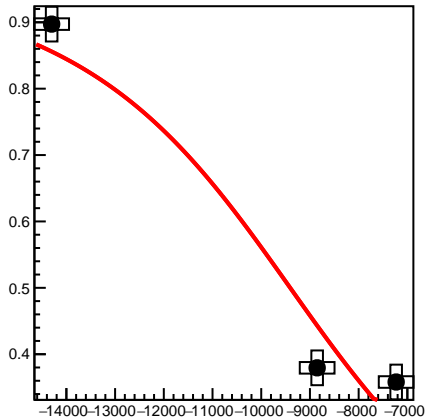
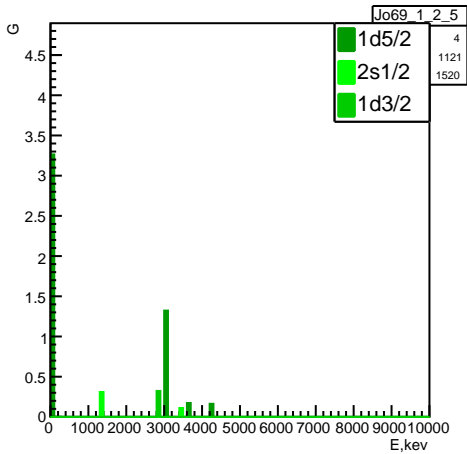
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13277.6 1d5/2 0.95375 0.959167

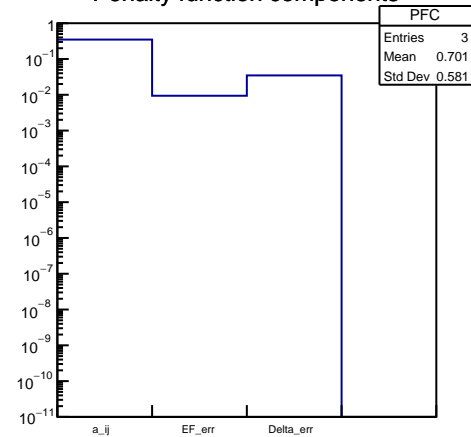
-10068.7 2s1/2 0.47425 0.8515

-5202.49 1d3/2 0.31775 0.3645

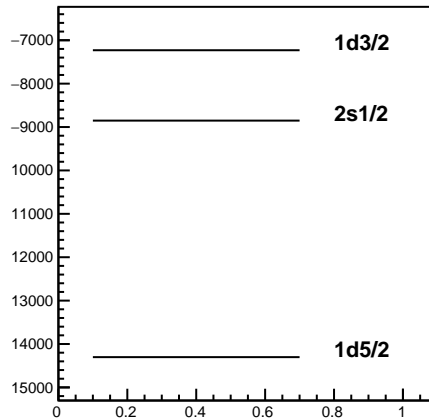
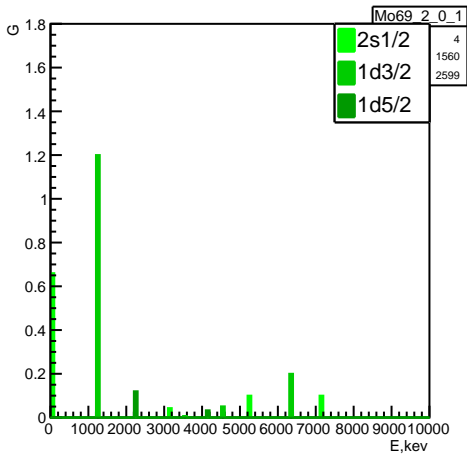
Jo69



Penalty function components



Mo69



Experiment: Jo69 (7) Mo69 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 E_F : -9405.17 \pm 769.494 keV Δ : -4831.22 \pm 1875.12 keV

penalty: 0.131018

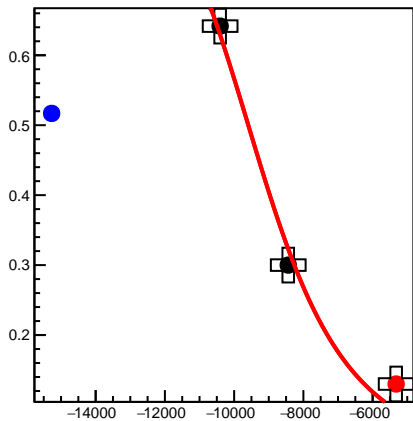
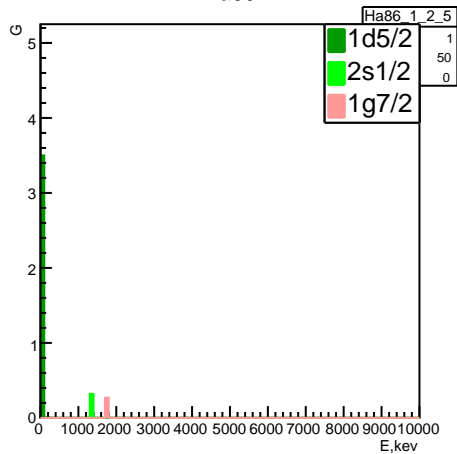
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-14302.5 1d5/2 0.89725 0.846167

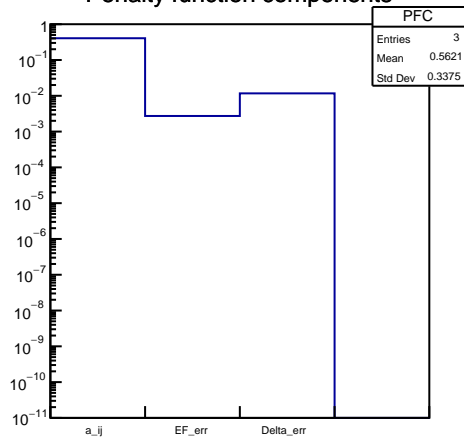
-8852.02 2s1/2 0.3795 0.662

-7230.1 1d3/2 0.358125 0.44525

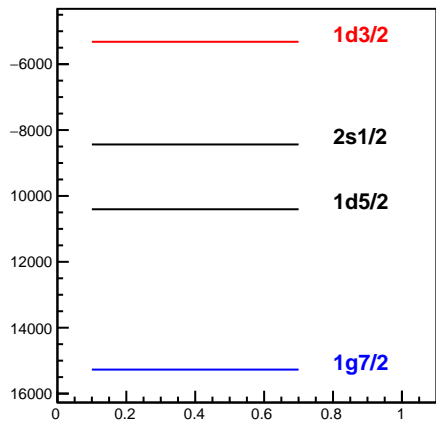
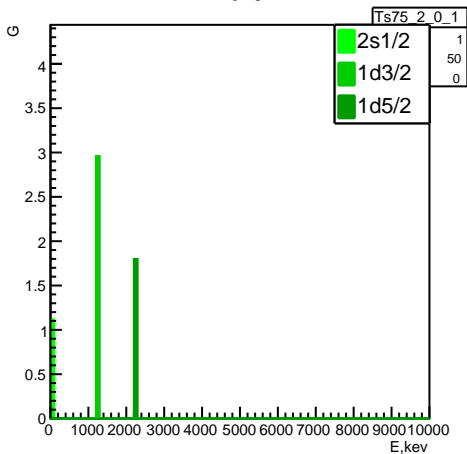
Ha86



Penalty function components



Ts75



Experiment: Ha86 (3) Ts75 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -9591.09 \pm 223.49$ keV $\Delta: -3045.55 \pm 629.896$ keV

penalty: 0.140049

SPE, keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

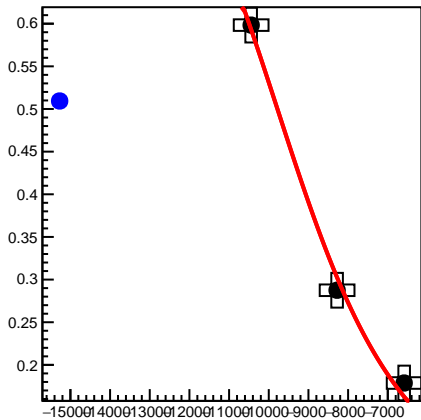
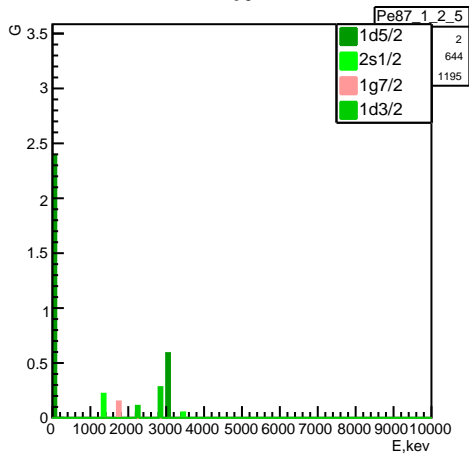
-10404.6 1d5/2 0.641667 0.883333

-8437.34 2s1/2 0.3 0.72

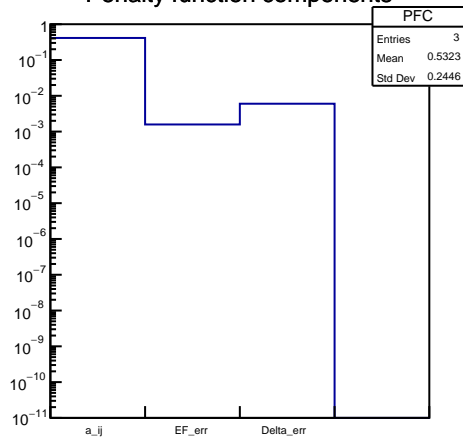
-15271.2 1g7/2 0.516875 0.03375

-5320.46 1d3/2 0.13 0.74

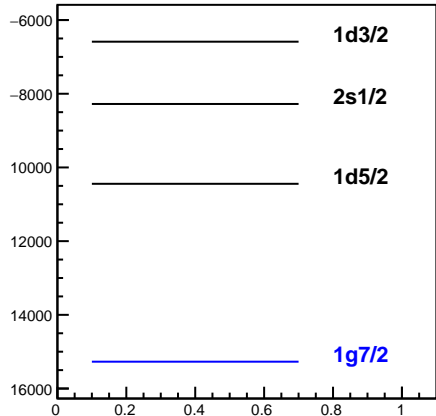
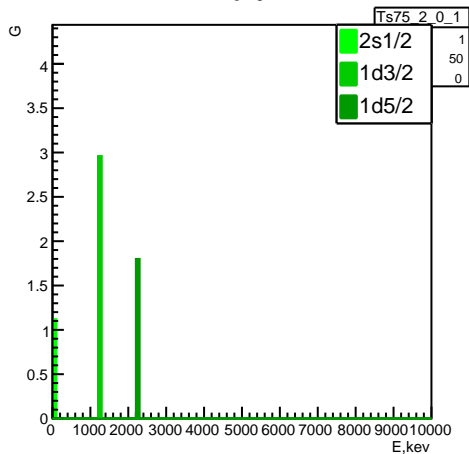
Pe87



Penalty function components



Ts75



Experiment: Pe87 (7) Ts75 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 E_F : -9781.77 \pm 129.345 keV Δ : 3495.92 \pm 323.623 keV

penalty: 0.140202

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

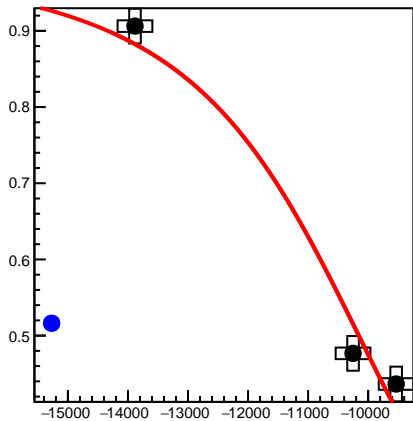
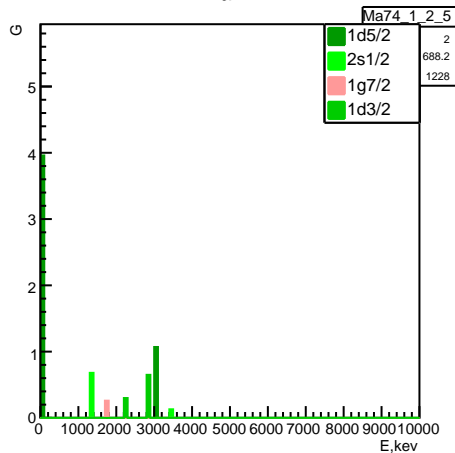
-10444 1d5/2 0.598333 0.796667

-8277.53 2s1/2 0.2875 0.695

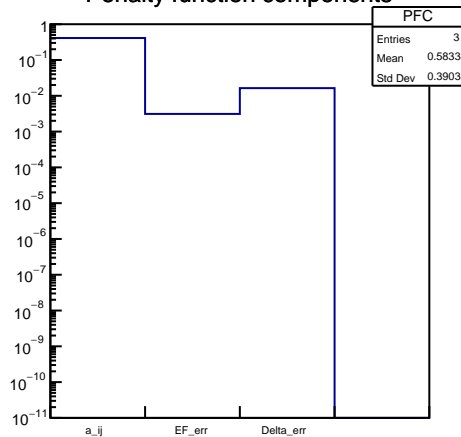
-15271.2 1g7/2 0.509375 0.01875

-6587.23 1d3/2 0.17875 0.8375

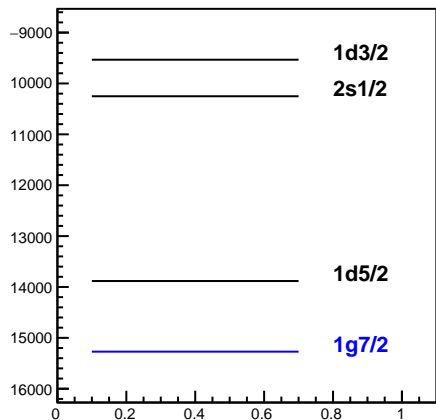
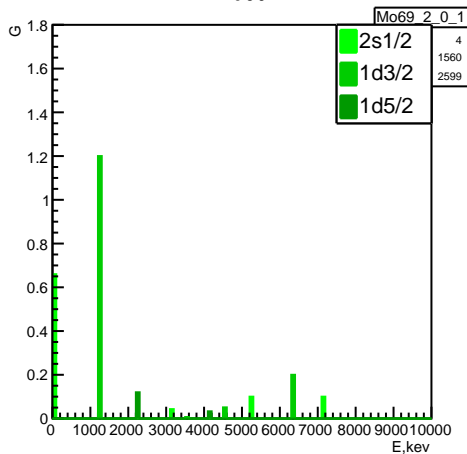
Ma74



Penalty function components



Mo69



Experiment: Ma74 (7) Mo69 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10155.5 \pm 254.995 \text{ keV}$ $\Delta: 3136.17 \pm 882.438 \text{ keV}$

penalty: 0.143566

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

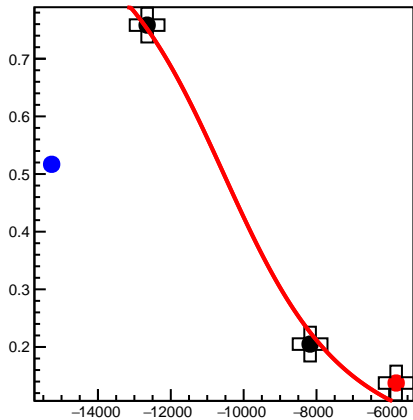
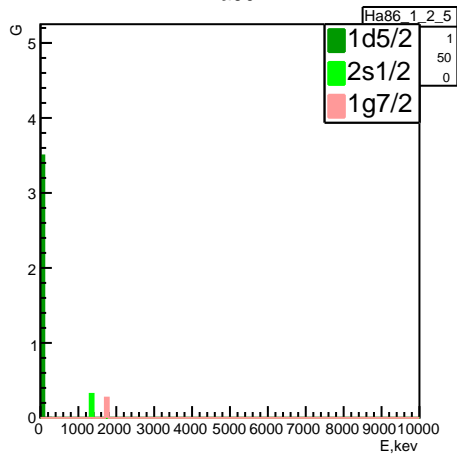
-13883.2 1d5/2 0.90625 0.864167

-10251.4 2s1/2 0.47675 0.8565

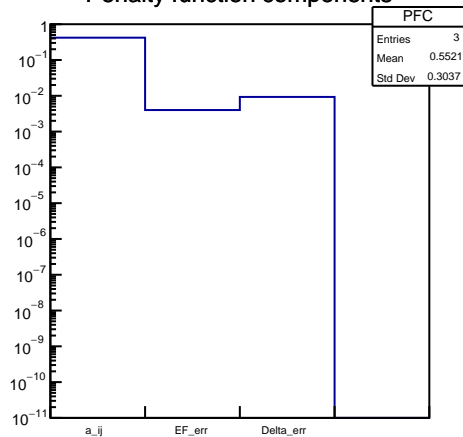
-15271.2 1g7/2 0.51625 0.0325

-9533.32 1d3/2 0.4365 0.602

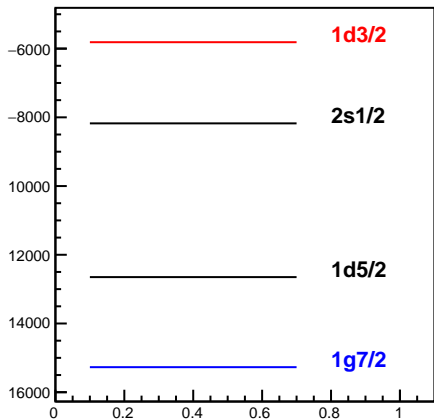
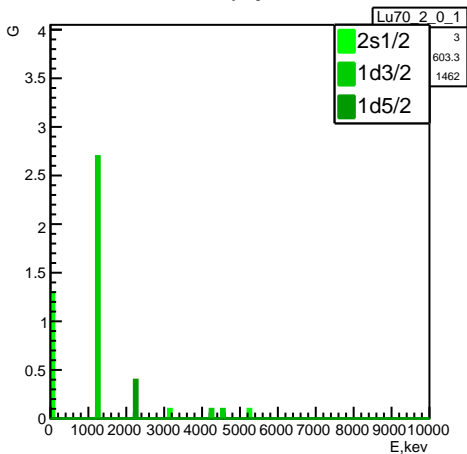
Ha86



Penalty function components



Lu70



Experiment: Ha86 (3) Lu70 (7)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10545.6 \pm 327.227 keV Δ : -3607.53 \pm 500.966 keV

penalty: 0.144535

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

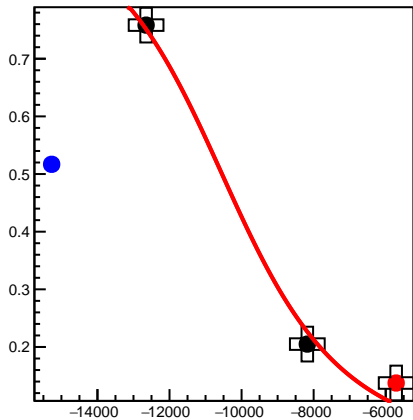
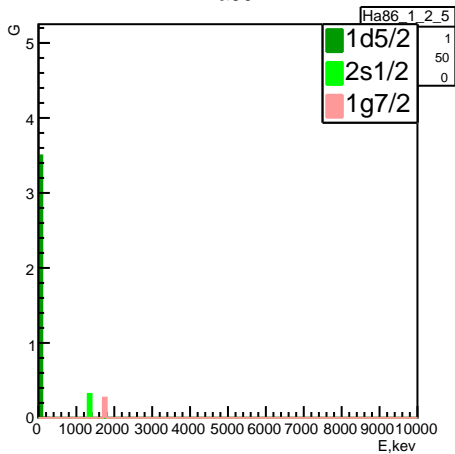
-12649.9 1d5/2 0.758333 0.65

-8175.68 2s1/2 0.205 0.91

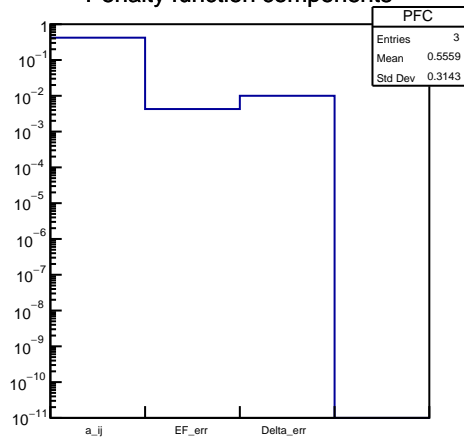
-15271.2 1g7/2 0.516875 0.03375

-5813.24 1d3/2 0.1375 0.725

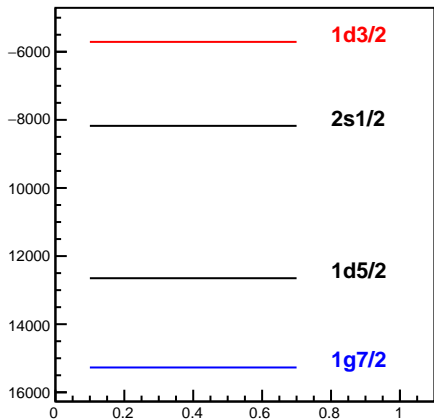
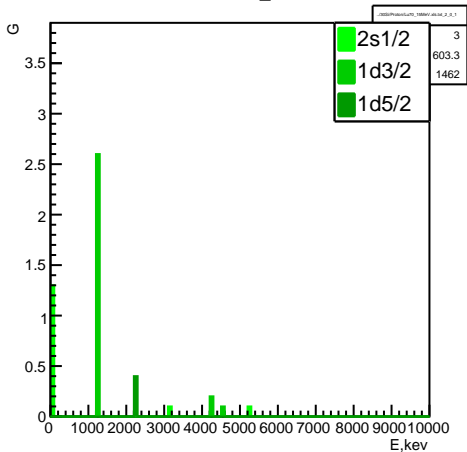
Ha86



Penalty function components



../30Si/Proton/Lu70_15MeV.xls.txt



Experiment: Ha86 (3) ../30Si/Proton/Lu70_15
proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10543.5 \pm 349.021 keV

Δ : -3622.41 \pm 539.274 keV

penalty: 0.144861

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

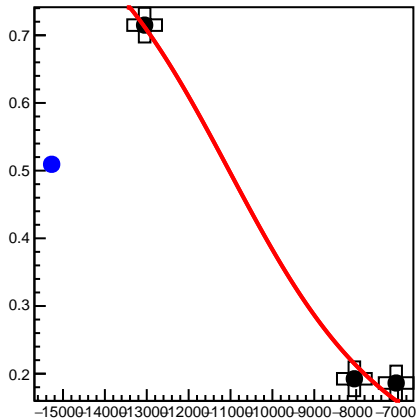
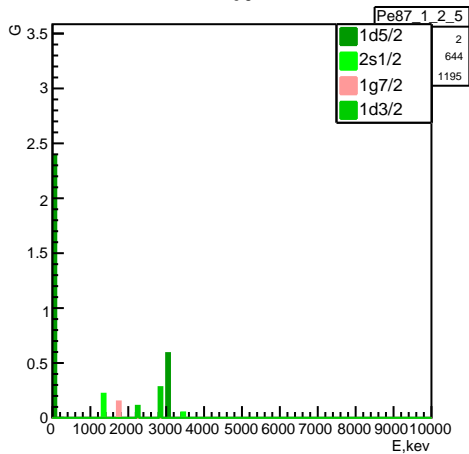
-12649.9 1d5/2 0.758333 0.65

-8175.68 2s1/2 0.205 0.91

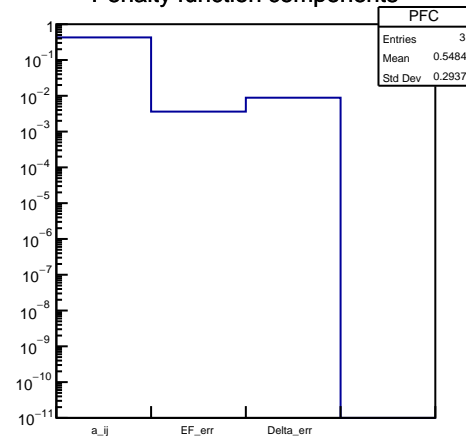
-15271.2 1g7/2 0.516875 0.03375

-5709.99 1d3/2 0.1375 0.725

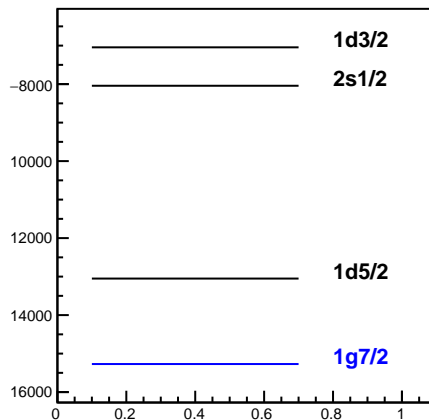
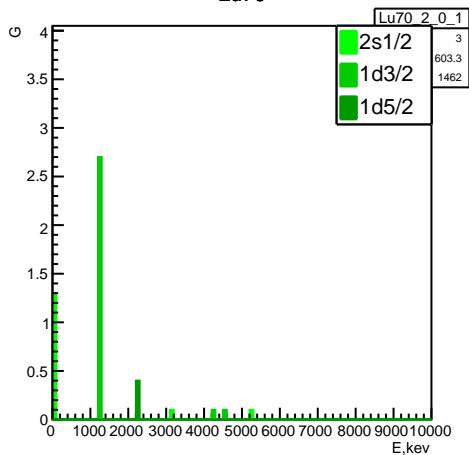
Pe87



Penalty function components



Lu70



Experiment: Pe87 (7) Lu70 (7)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -11032.6 \pm 295.93 keV Δ : 4304.86 \pm 476.523 keV

penalty: 0.146687

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

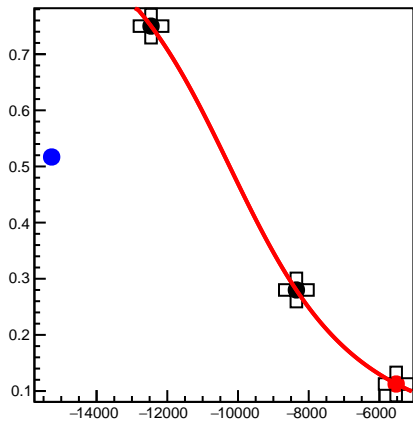
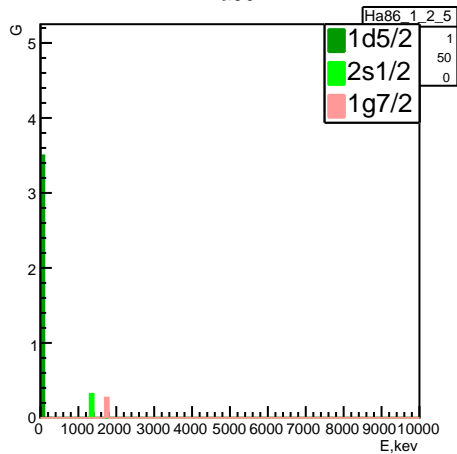
-13051 1d5/2 0.715 0.563333

-8042.79 2s1/2 0.1925 0.885

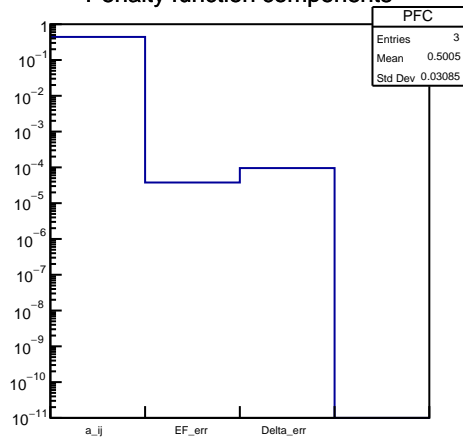
-15271.2 1g7/2 0.509375 0.01875

-7044.69 1d3/2 0.18625 0.8225

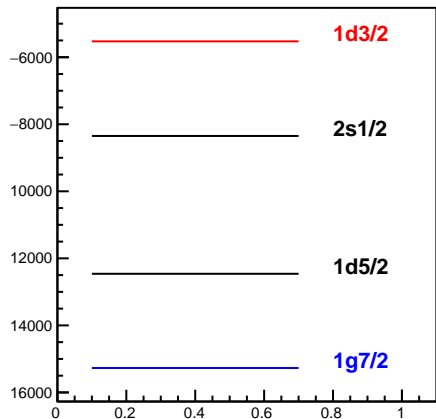
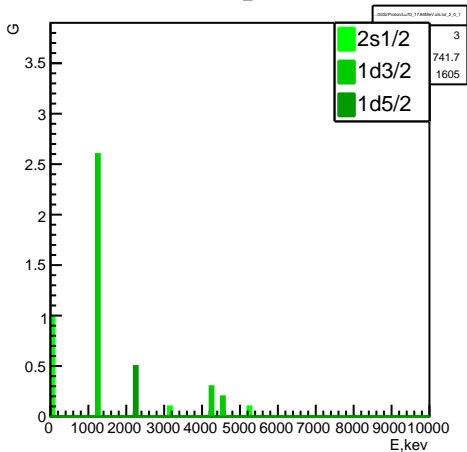
Ha86



Penalty function components



../30Si/Proton/Lu70_17.85MeV.xls.txt



Experiment: Ha86 (3) ../30Si/Proton/Lu70_17
proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10236.8 \pm 3.0914 keV

Δ : -3847.92 \pm 5.15224 keV

penalty: 0.147093

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

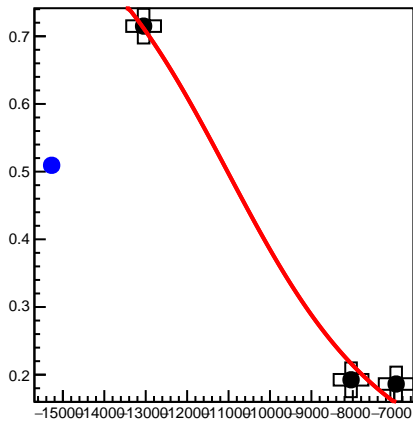
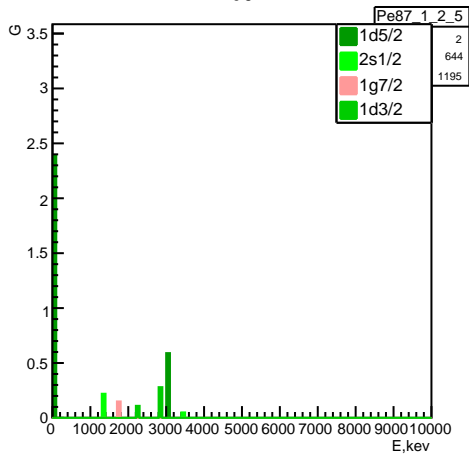
-12460.3 1d5/2 0.75 0.666667

-8349.04 2s1/2 0.28 0.76

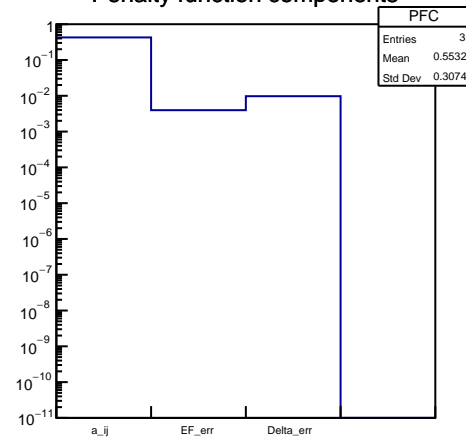
-15271.2 1g7/2 0.516875 0.03375

-5526.82 1d3/2 0.1125 0.775

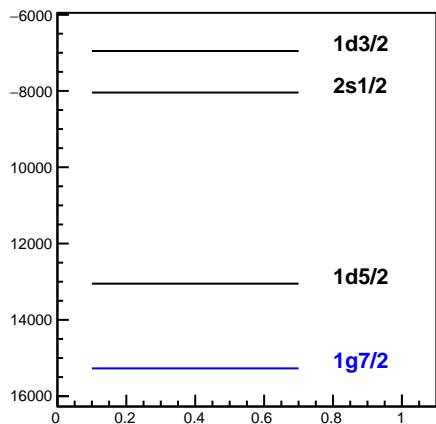
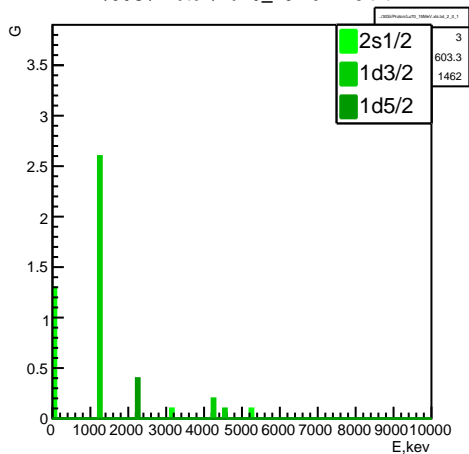
Pe87



Penalty function components



../30Si/Proton/Lu70_15MeV.xls.txt



Experiment: Pe87 (7) ../30Si/Proton/Lu70_15

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -11024.6 \pm 324.393 \text{ keV}$ $\Delta: -4333.8 \pm 525.305 \text{ keV}$

penalty: 0.147105

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

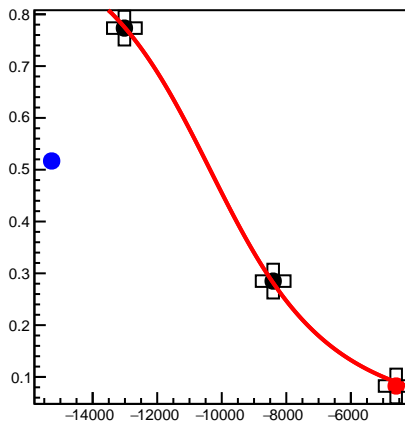
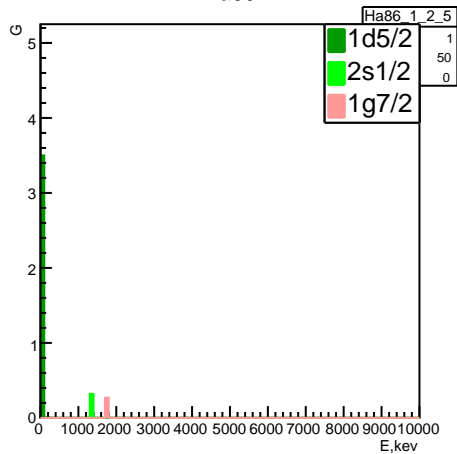
-13051 1d5/2 0.715 0.563333

-8042.79 2s1/2 0.1925 0.885

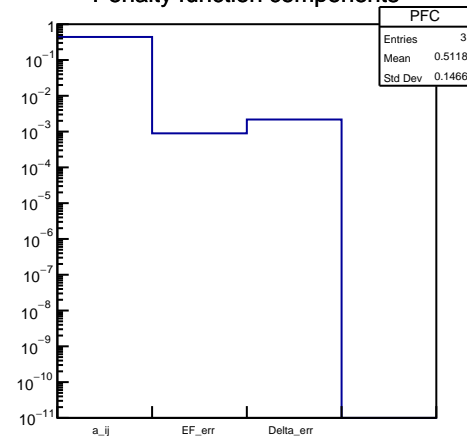
-15271.2 1g7/2 0.509375 0.01875

-6953.68 1d3/2 0.18625 0.8225

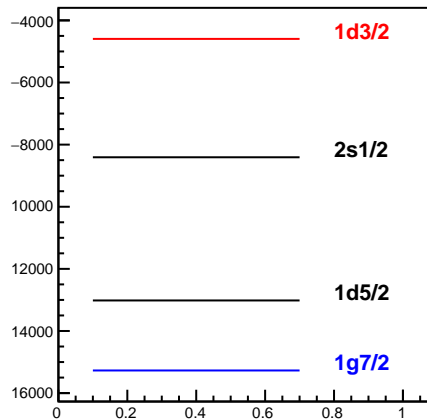
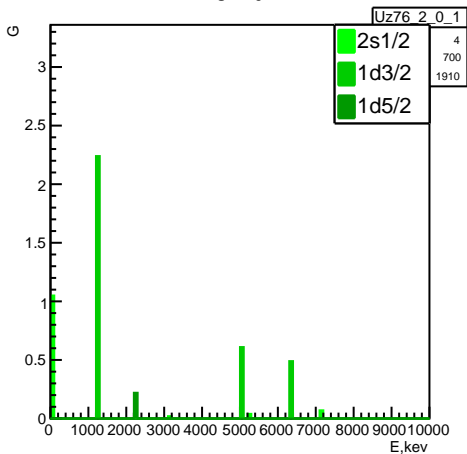
Ha86



Penalty function components



Uz76



Experiment: Ha86 (3) Uz76 (8)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10362 \pm 73.0908 keV Δ : 4025.09 \pm 117.171 keV

penalty: 0.147793

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

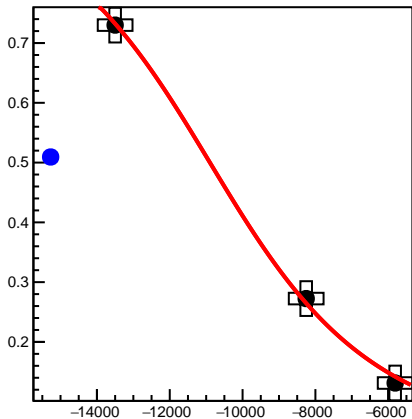
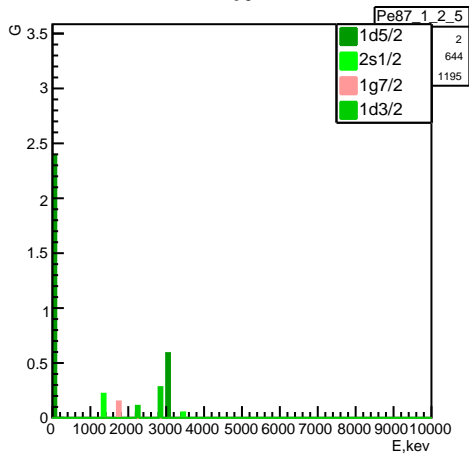
-13017 1d5/2 0.773333 0.62

-8407.22 2s1/2 0.285 0.75

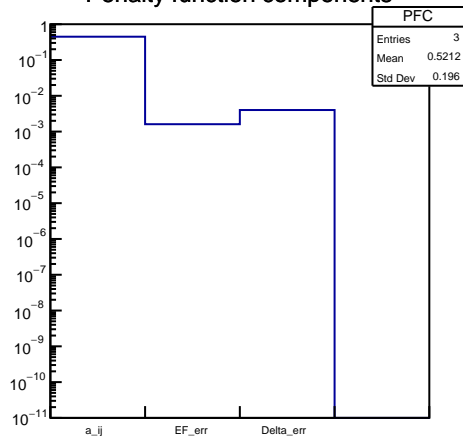
-15271.2 1g7/2 0.516875 0.03375

-4596.18 1d3/2 0.0825 0.835

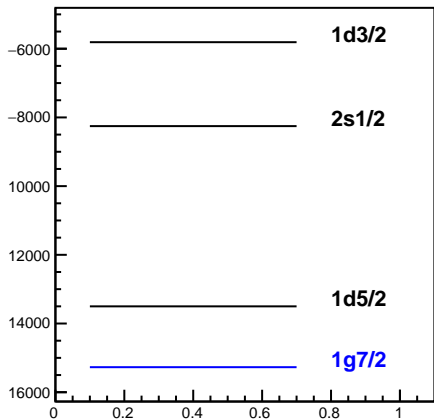
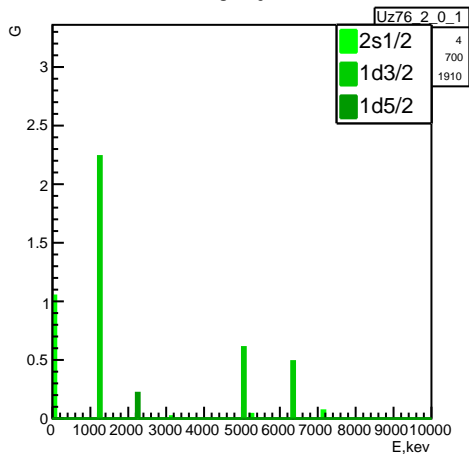
Pe87



Penalty function components



Uz76



Experiment: Pe87 (7) Uz76 (8)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10896.9 \pm 131.596$ keV $\Delta: -4958.23 \pm 215.778$ keV

penalty: 0.151072

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

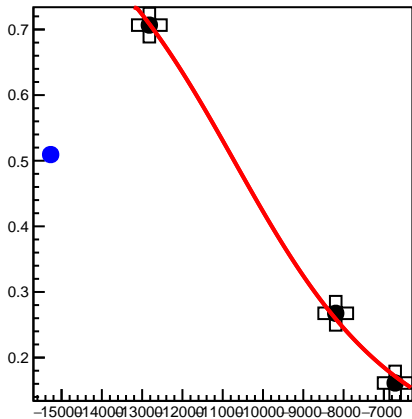
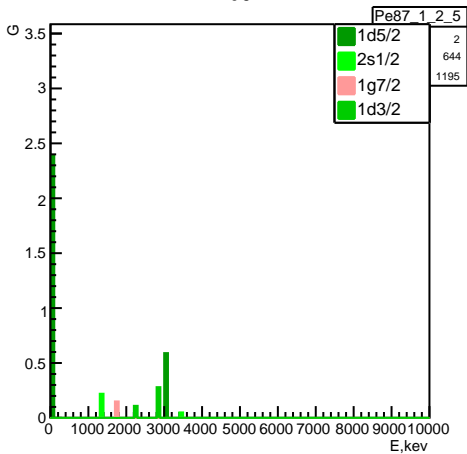
-13500.3 1d5/2 0.73 0.533333

-8252.98 2s1/2 0.2725 0.725

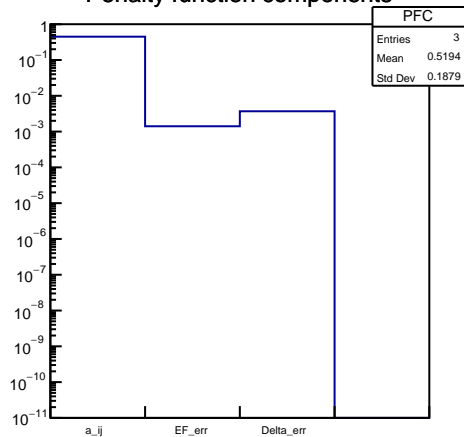
-15271.2 1g7/2 0.509375 0.01875

-5809.62 1d3/2 0.13125 0.9325

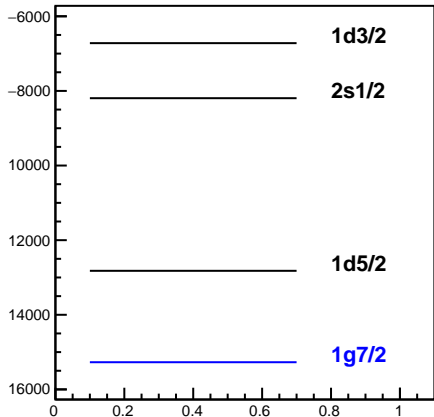
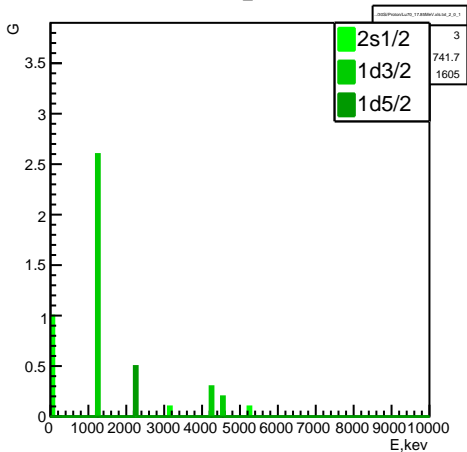
Pe87



Penalty function components



../30Si/Proton/Lu70_17.85MeV.xls.txt



Experiment: Pe87 (7) ../30Si/Proton/Lu70_17

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10718 ± 115.234 keV

Δ: -4584.91 ± 199.184 keV

penalty: 0.15118

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

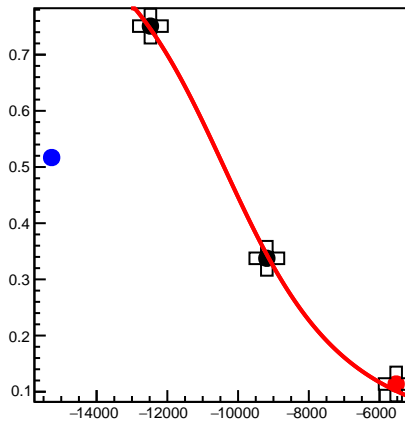
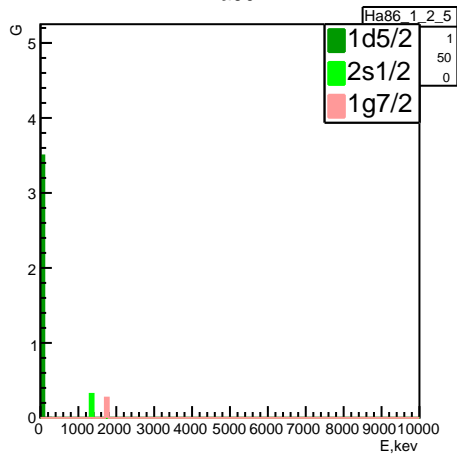
-12821.5 1d5/2 0.706667 0.58

-8194.93 2s1/2 0.2675 0.735

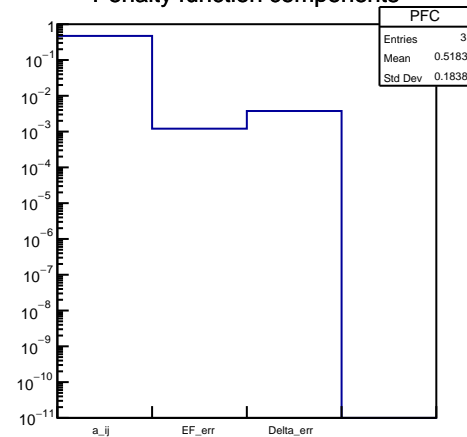
-15271.2 1g7/2 0.509375 0.01875

-6719.71 1d3/2 0.16125 0.8725

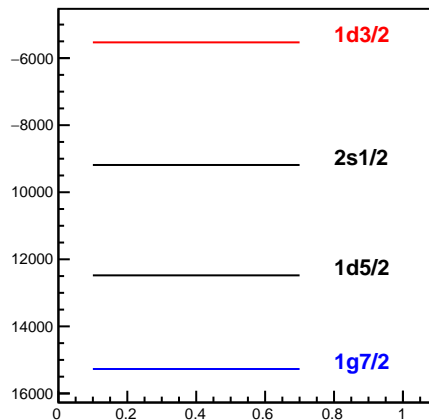
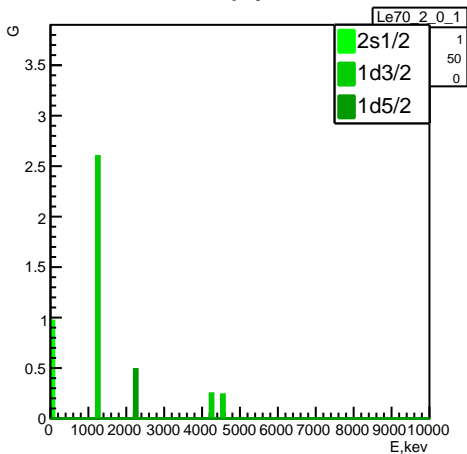
Ha86



Penalty function components



Le70



Experiment: Ha86 (3) Le70 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10396.8 \pm 98.7195 keV Δ : 3686.25 \pm 202.528 keV

penalty: 0.158634

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

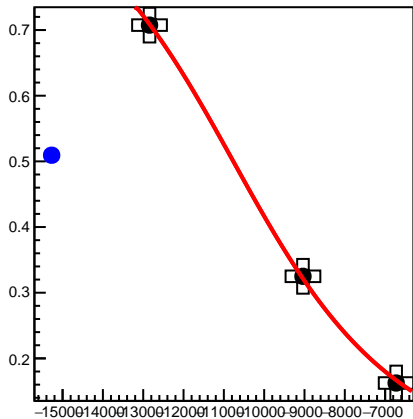
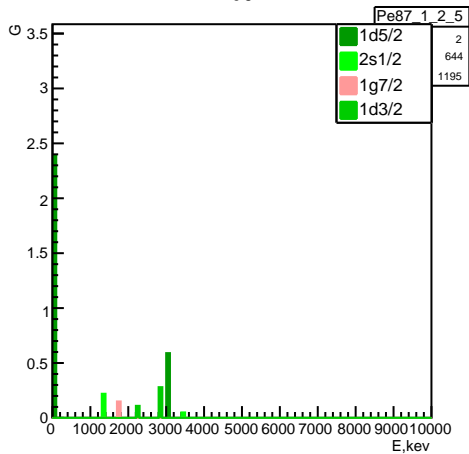
-12478.8 1d5/2 0.750833 0.665

-9186.97 2s1/2 0.3375 0.645

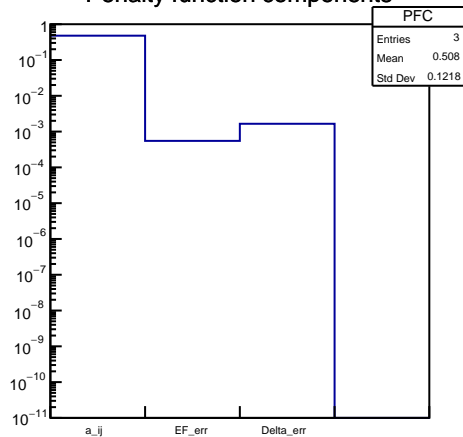
-15271.2 1g7/2 0.516875 0.03375

-5530.58 1d3/2 0.11375 0.7725

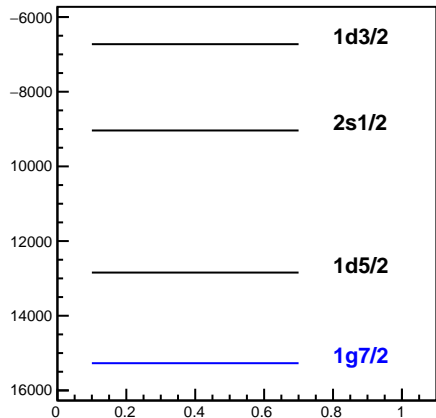
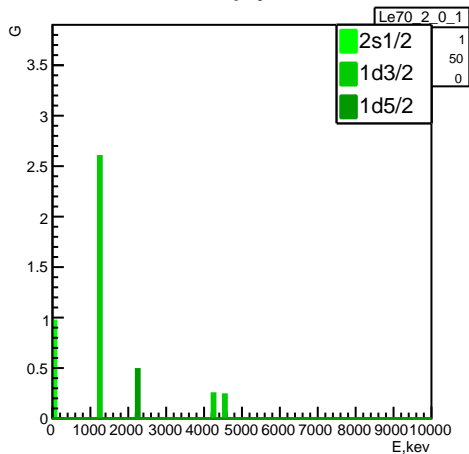
Pe87



Penalty function components



Le70



Experiment: Pe87 (7) Le70 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10765.4 \pm 44.9942 keV Δ : 4518.52 \pm 89.0532 keV

penalty: 0.160144

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

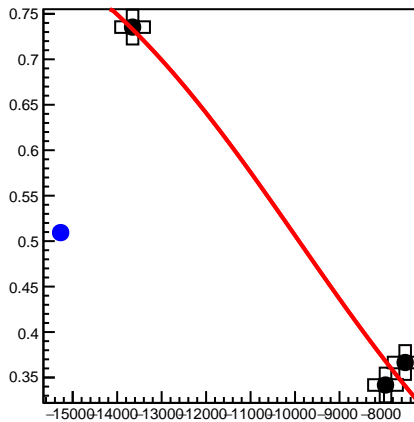
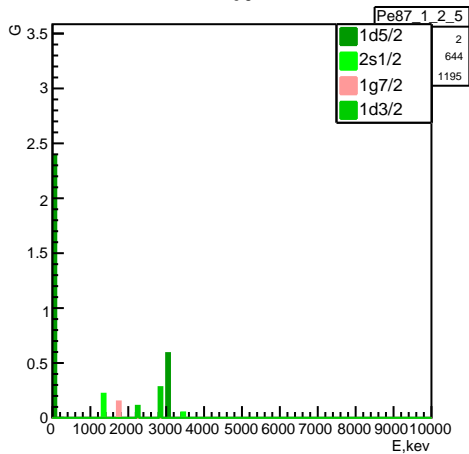
-12843.8 1d5/2 0.7075 0.578333

-9038.06 2s1/2 0.325 0.62

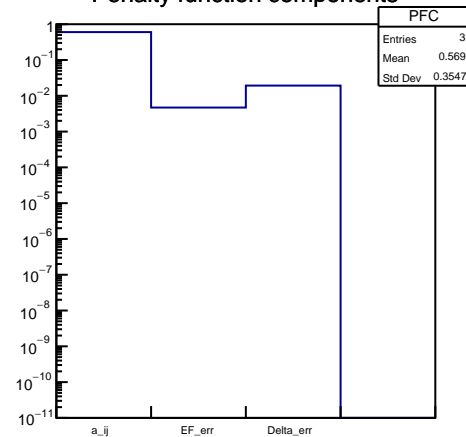
-15271.2 1g7/2 0.509375 0.01875

-6726.48 1d3/2 0.1625 0.87

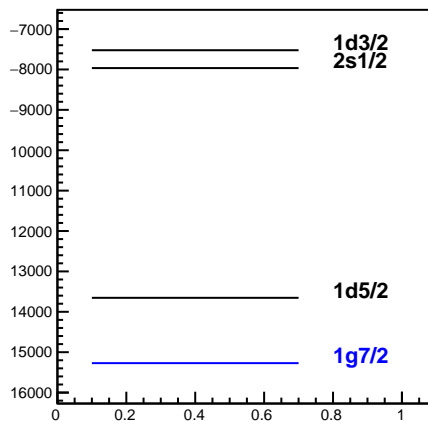
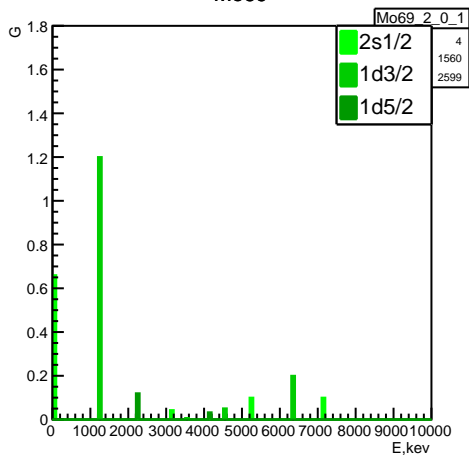
Pe87



Penalty function components



Mo69



Experiment: Pe87 (7) Mo69 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -9911.21 \pm 384.114 \text{ keV}$ $\Delta: -7107.69 \pm 1039.34 \text{ keV}$

penalty: 0.208847

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

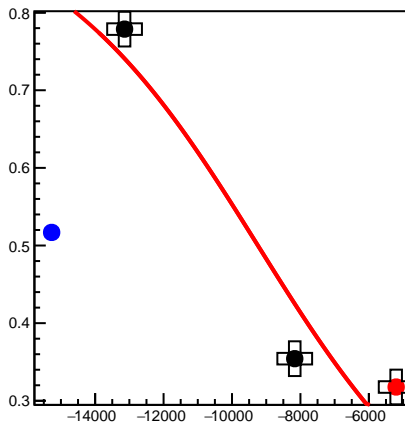
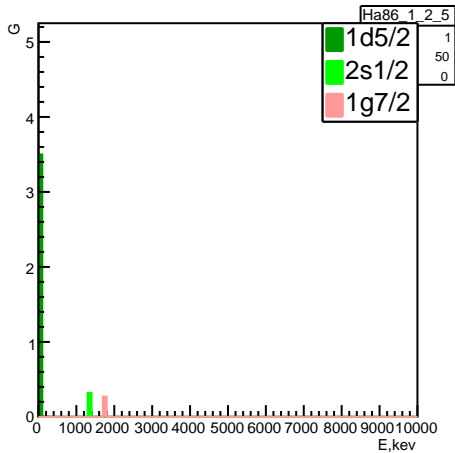
-13653.9 1d5/2 0.735417 0.5225

-7965.72 2s1/2 0.34175 0.5865

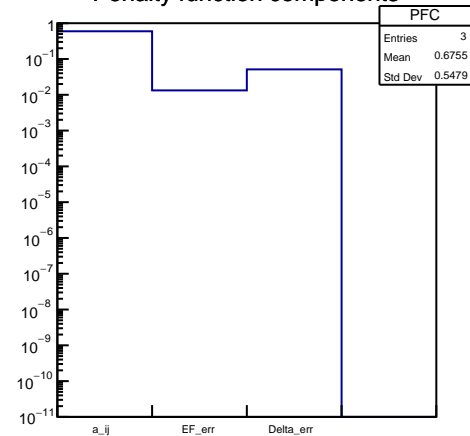
-15271.2 1g7/2 0.509375 0.01875

-7523.74 1d3/2 0.3665 0.462

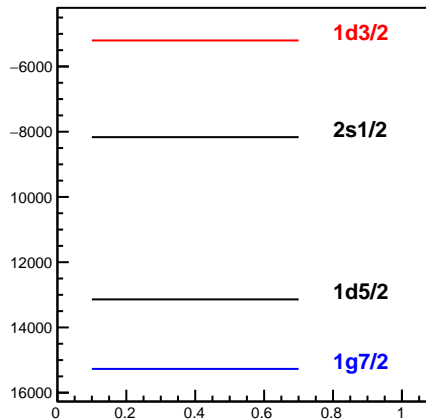
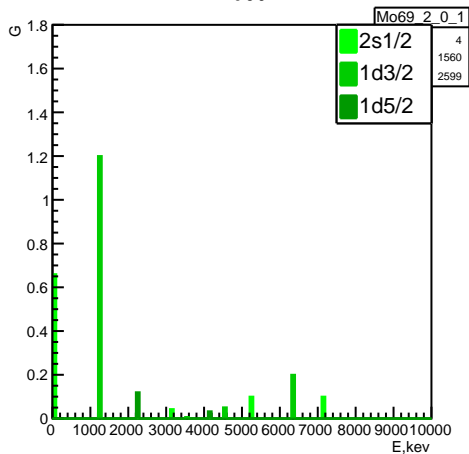
Ha86



Penalty function components



Mo69



Experiment: Ha86 (3) Mo69 (11)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -9242.88 \pm 1086.34$ keV $\Delta: 7090.88 \pm 2763.69$ keV

penalty: 0.219941

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

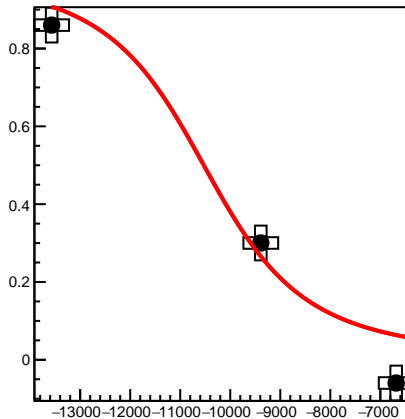
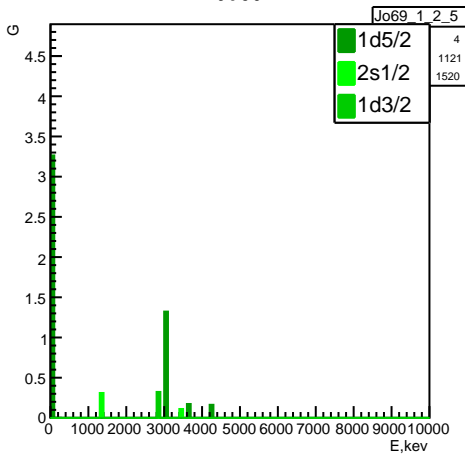
-13140.2 1d5/2 0.77875 0.609167

-8166.63 2s1/2 0.35425 0.6115

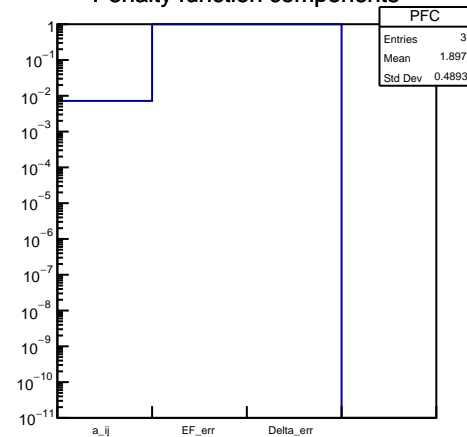
-15271.2 1g7/2 0.516875 0.03375

-5202.49 1d3/2 0.31775 0.3645

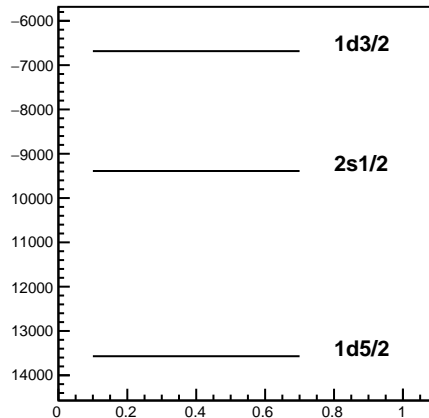
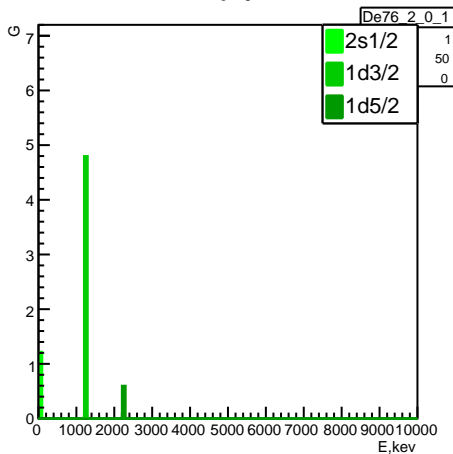
Jo69



Penalty function components



De76



Experiment: Jo69 (7) De76 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10528.2 \pm 1362.52 keV Δ : -2150.19 \pm 1723.09 keV

penalty: 45248.6

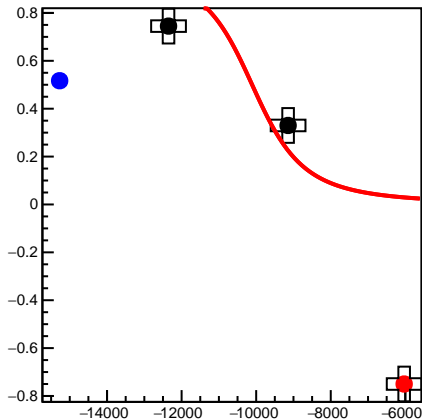
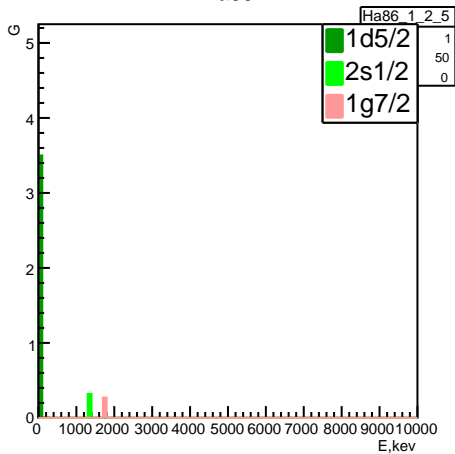
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13570.1 1d5/2 0.860167 0.920333

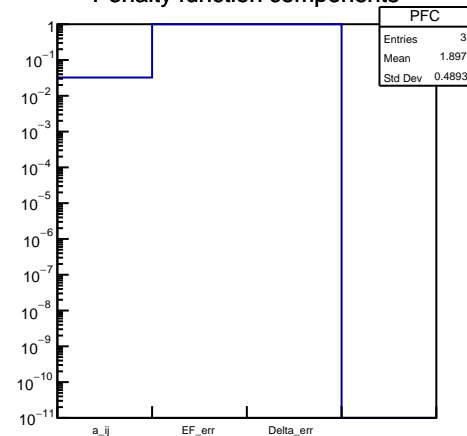
-9389.28 2s1/2 0.30025 0.8205

-6683.84 1d3/2 -0.059625 1.28075

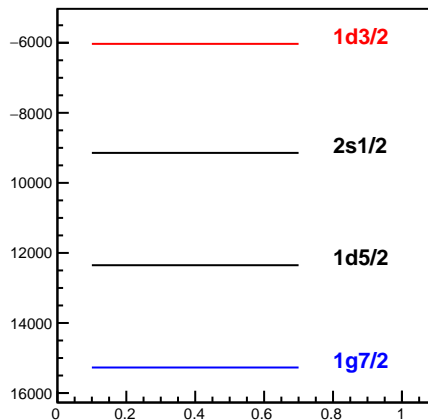
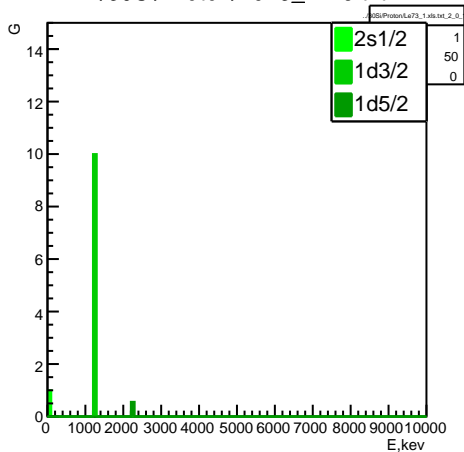
Ha86



Penalty function components



../30Si/Proton/Le73_1.xls.txt



Experiment: Ha86 (3) ../30Si/Proton/Le73_1.)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10108.7 \pm 81850.2 keV Δ : 1464.14 \pm 53895.7 keV

penalty: 45248.6

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

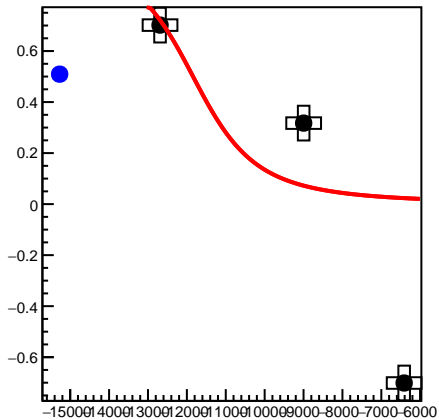
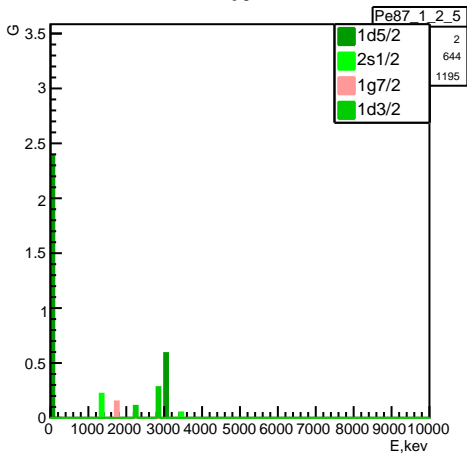
-12351.1d5/2 0.745 0.676667

-9144.02 2s1/2 0.33 0.66

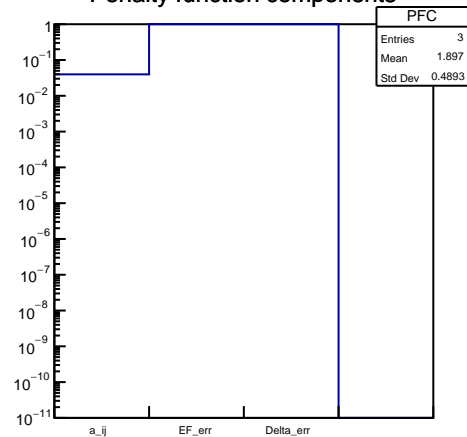
-15271.2 1g7/2 0.516875 0.03375

-6031.19 1d3/2 -0.75 2.5

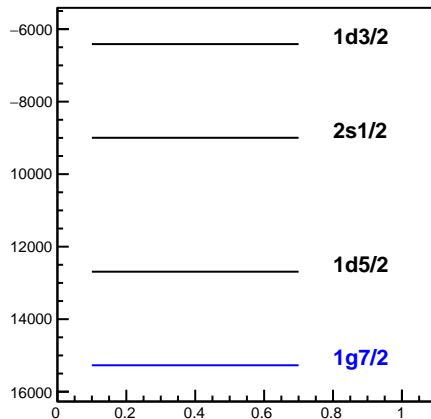
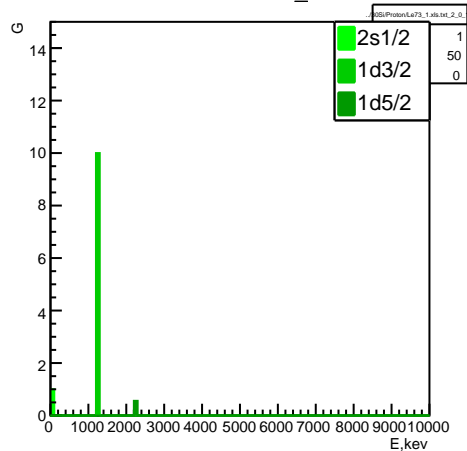
Pe87



Penalty function components



../30Si/Proton/Le73_1.xls.txt



Experiment: Pe87 (7) ../30Si/Proton/Le73_1.)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -11840.6 ± 5476.73 keV

Δ: -1722.68 ± 6999.89 keV

penalty: 45248.6

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

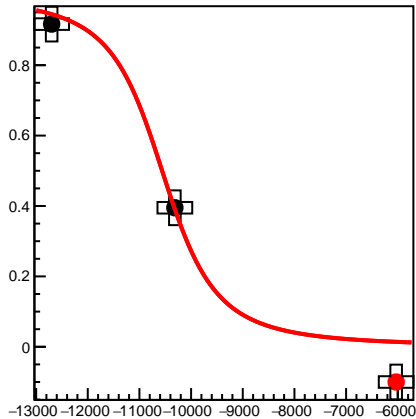
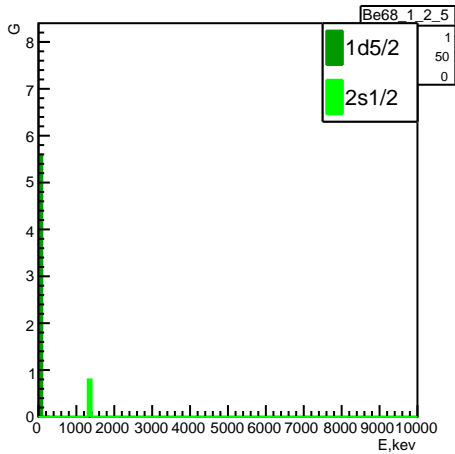
-12690 1d5/2 0.701667 0.59

-8996.94 2s1/2 0.3175 0.635

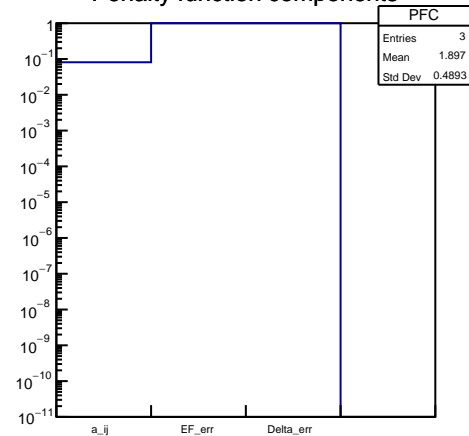
-15271.2 1g7/2 0.509375 0.01875

-6412.95 1d3/2 -0.70125 2.5975

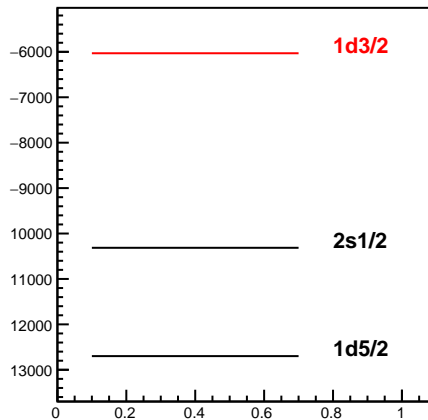
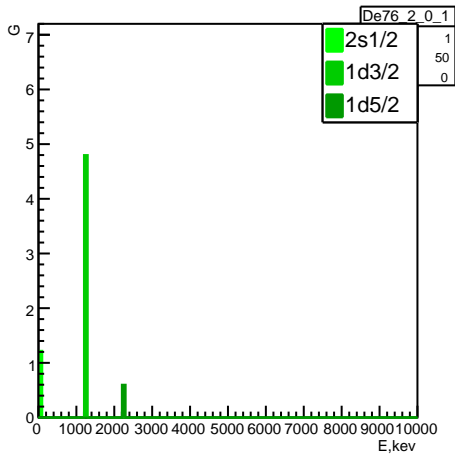
Be68



Penalty function components



De76



Experiment: Be68 (2) De76 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10560.7 \pm 390.848 \text{ keV}$ $\Delta: 1098.22 \pm 1205.06 \text{ keV}$

penalty: 45248.7

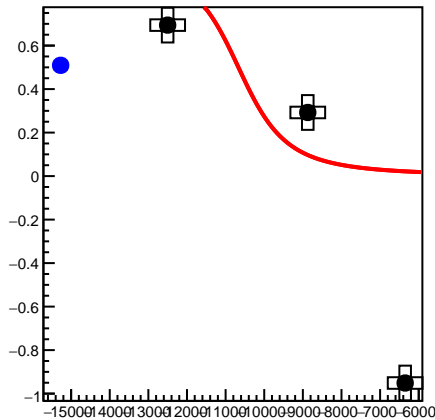
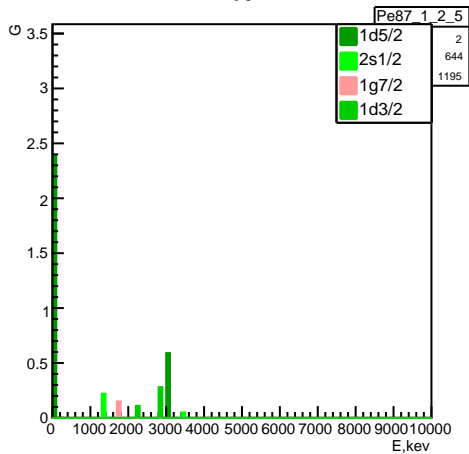
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12698.9 1d5/2 0.916667 1.03333

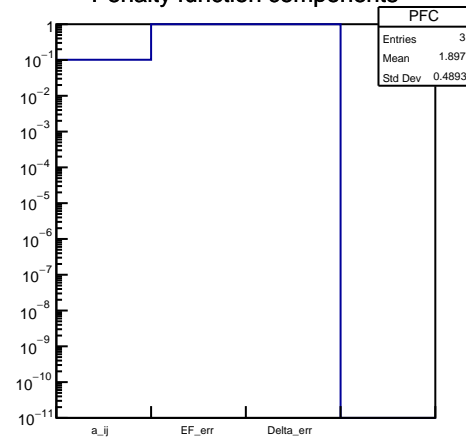
-10314.2 2s1/2 0.395 1.01

-6031.19 1d3/2 -0.1 1.2

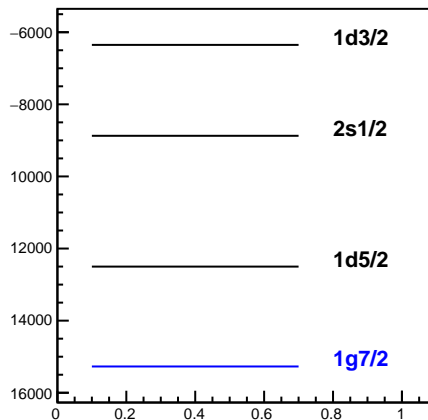
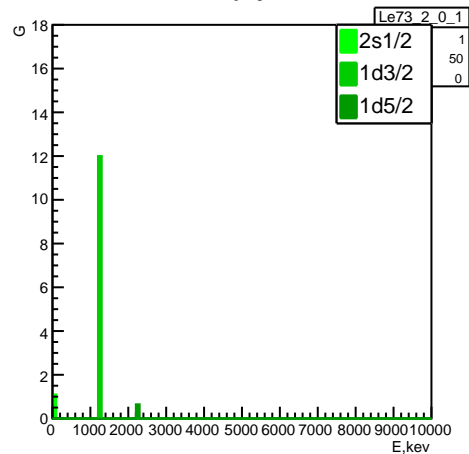
Pe87



Penalty function components



Le73



Experiment: Pe87 (7) Le73 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10668.2 \pm 1.43522 \text{ keV}$ $\Delta: 1316.82 \pm 1.43522 \text{ keV}$

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

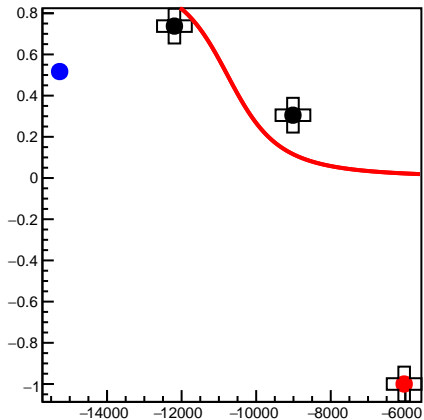
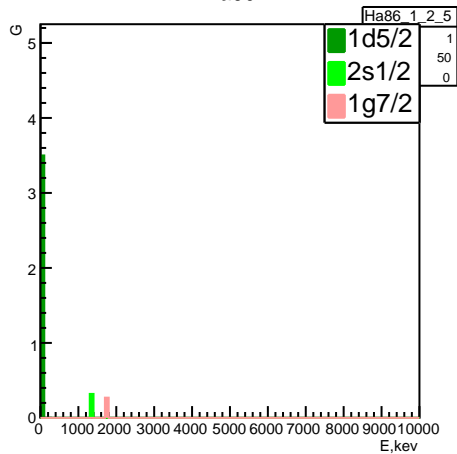
-12500.9 1d5/2 0.694167 0.605

-8872.88 2s1/2 0.2925 0.685

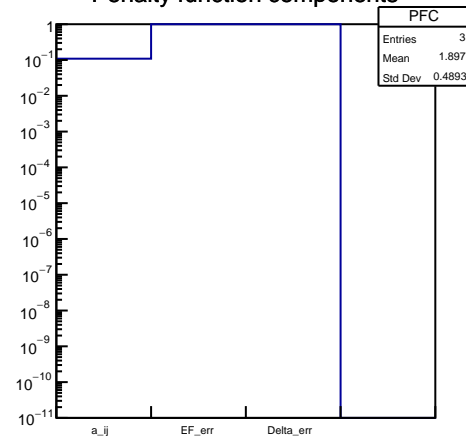
-15271.2 1g7/2 0.509375 0.01875

-6351.33 1d3/2 -0.95125 3.0975

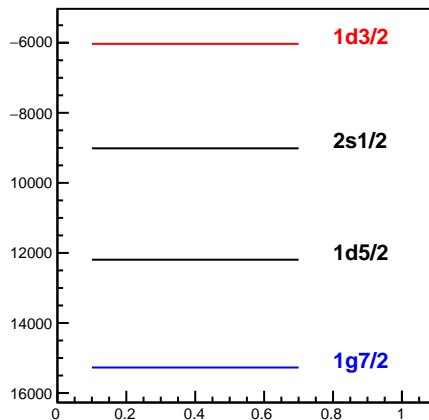
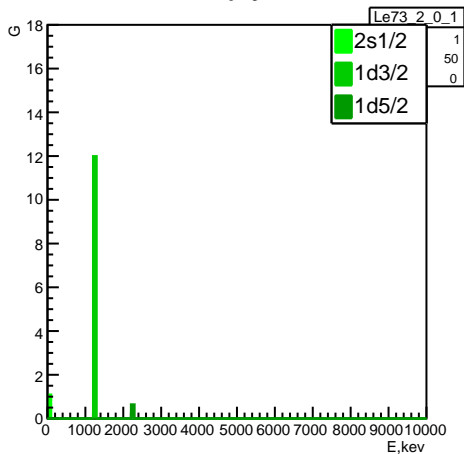
Ha86



Penalty function components



Le73



Experiment: Ha86 (3) Le73 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10771.7 \pm 1.47856 keV Δ : 1466.03 \pm 1.47856 keV

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

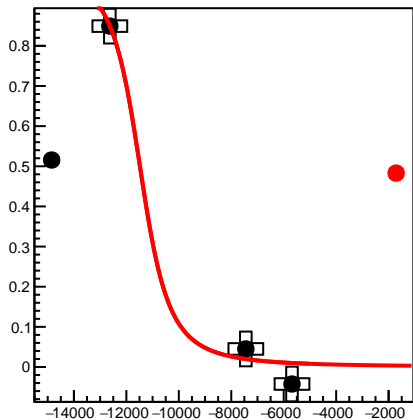
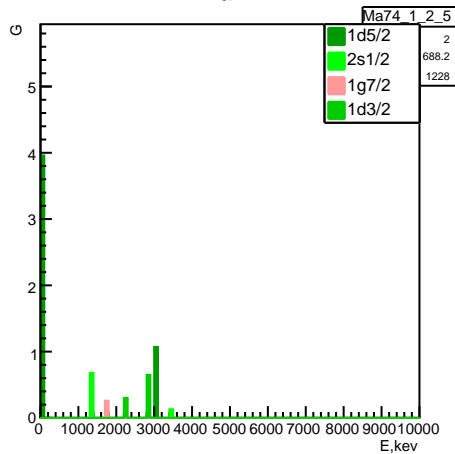
-12192.9 1d5/2 0.7375 0.691667

-9013.97 2s1/2 0.305 0.71

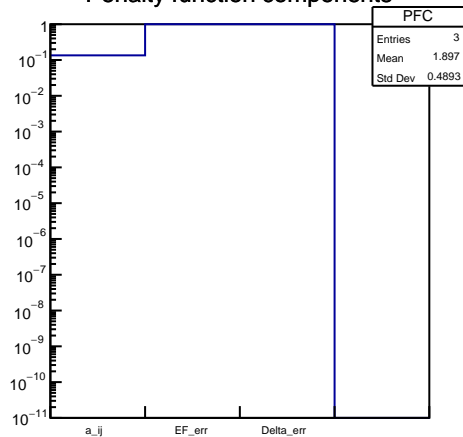
-15271.2 1g7/2 0.516875 0.03375

-6031.19 1d3/2 -1 3

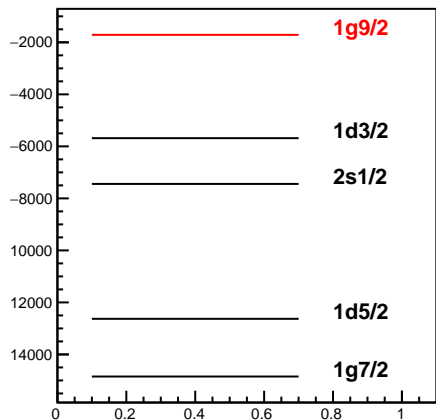
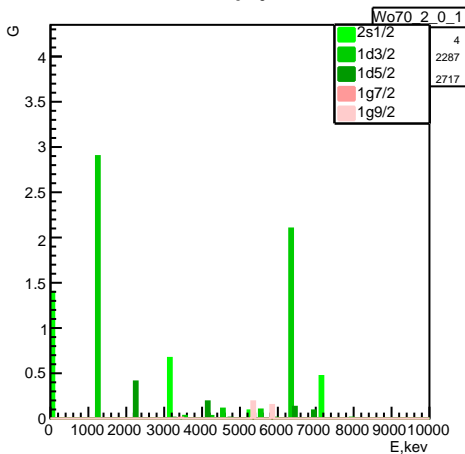
Ma74



Penalty function components



Wo70



Experiment: Ma74 (7) Wo70 (21)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -11483 \pm 1311.58 \text{ keV}$ $\Delta: 1173.66 \pm 1301.02 \text{ keV}$

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12630.2 1d5/2 0.849167 0.978333

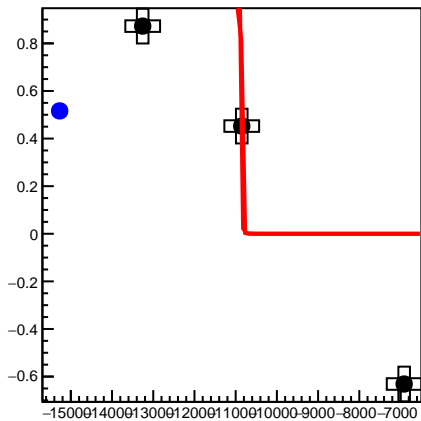
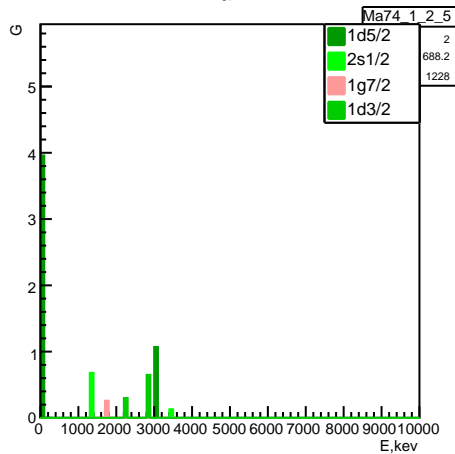
-7444.27 2s1/2 0.045 1.72

-14849.4 1g7/2 0.515625 0.03375

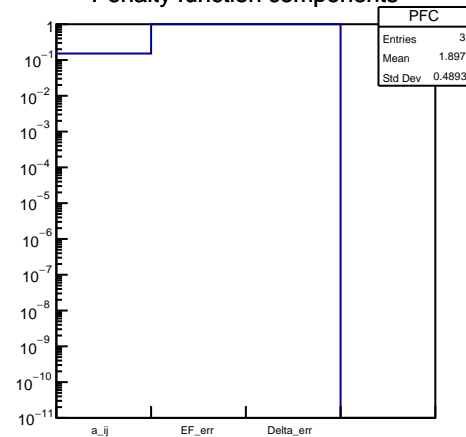
-5684.56 1d3/2 -0.042375 1.55975

-1712.22 1g9/2 0.483 0.034

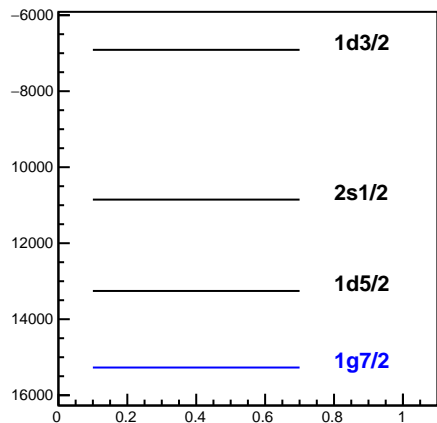
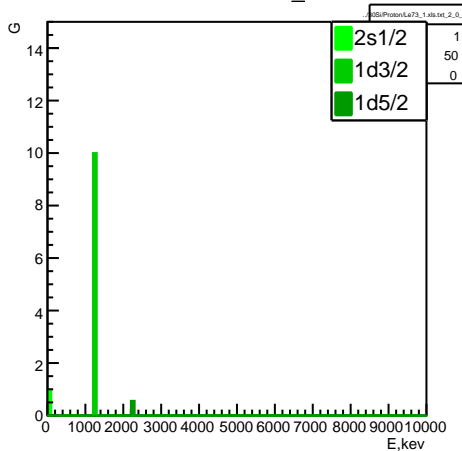
Ma74



Penalty function components



../30Si/Proton/Le73_1.xls.txt



Experiment: Ma74 (7) ../30Si/Proton/Le73_1.:

proton transfer

p separation energy A:13516.9, A+1: 7297.3:

 $E_F: -10853.5 \pm 49.6638 \text{ keV}$ $\Delta: 10.1885 \pm 511.218 \text{ keV}$

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

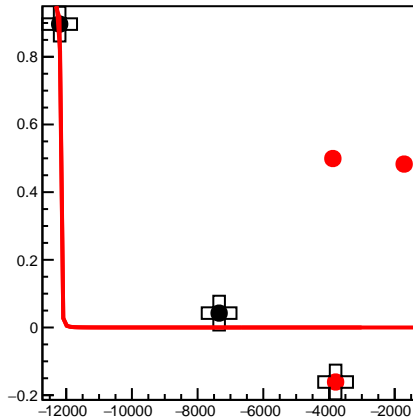
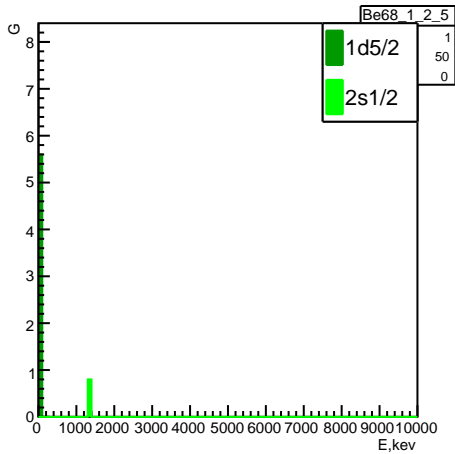
-13256.2 1d5/2 0.8725 0.931667

-10852.5 2s1/2 0.4525 0.905

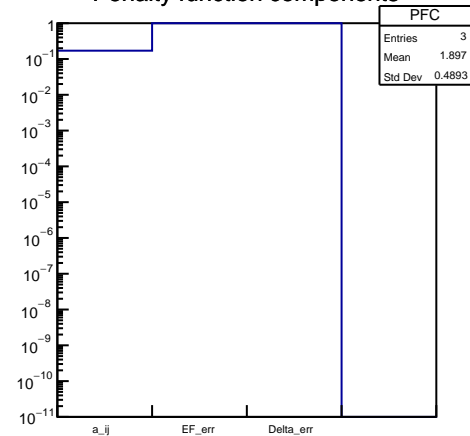
-15271.2 1g7/2 0.51625 0.0325

-6911.68 1d3/2 -0.63125 2.7375

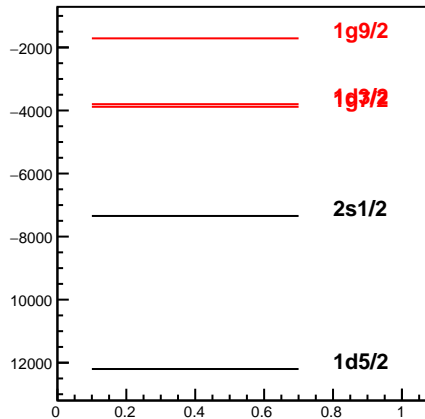
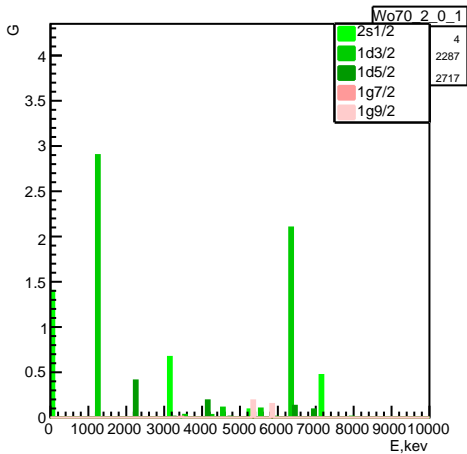
Be68



Penalty function components



Wo70



Experiment: Be68 (2) Wo70 (21)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -12165.8 \pm 282.847 \text{ keV}$ $\Delta: -26.2418 \pm 217.636 \text{ keV}$

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12200 1d5/2 0.896667 1.07333

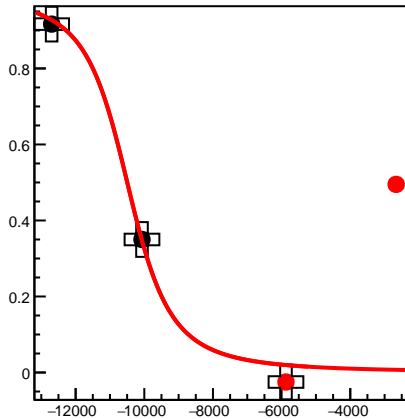
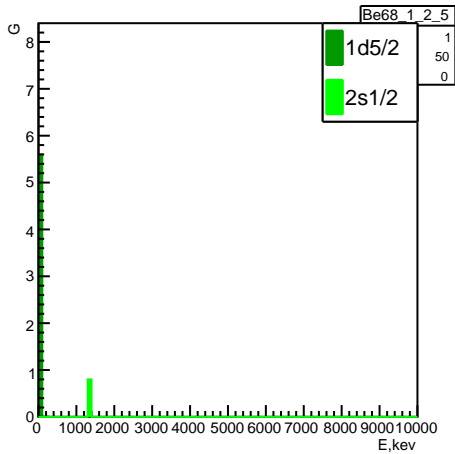
-7345.36 2s1/2 0.0425 1.715

-3799.39 1d3/2 -0.161125 1.32225

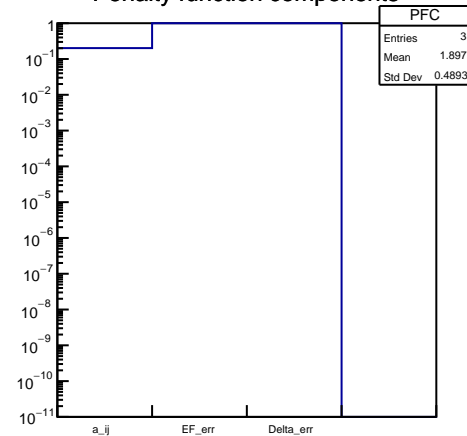
-3882.72 1g7/2 0.499375 0.00125

-1712.22 1g9/2 0.483 0.034

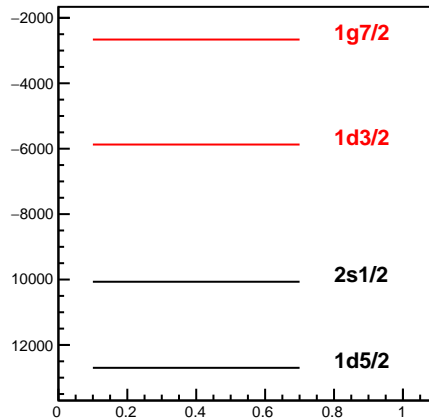
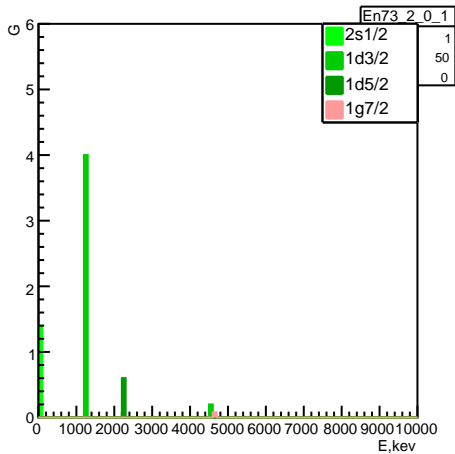
Be68



Penalty function components



En73



Experiment: Be68 (2) En73 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10496.3 \pm 189.909 \text{ keV}$ $\Delta: -1335.44 \pm 438.759 \text{ keV}$

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

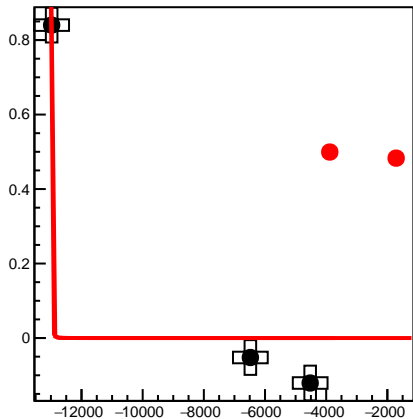
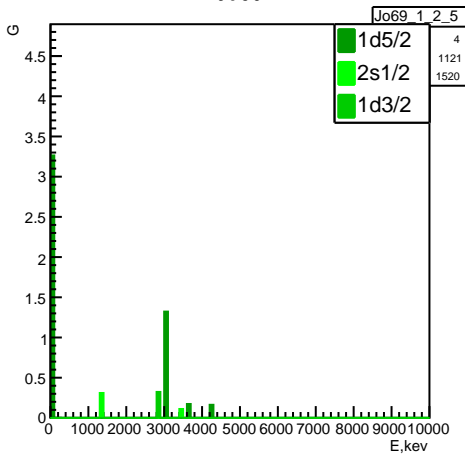
-12698.9 1d5/2 0.916667 1.03333

-10067.4 2s1/2 0.35 1.1

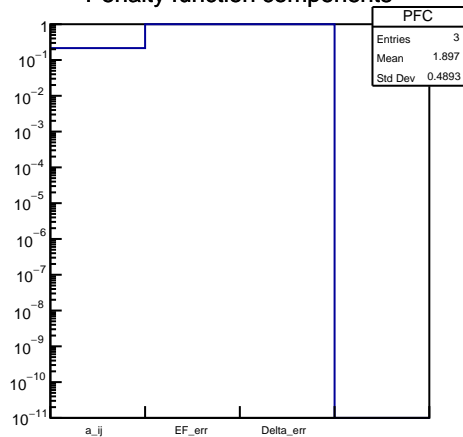
-5872.8 1d3/2 -0.025 1.05

-2663.12 1g7/2 0.495 0.01

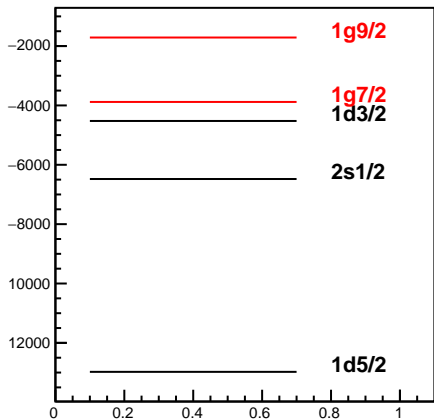
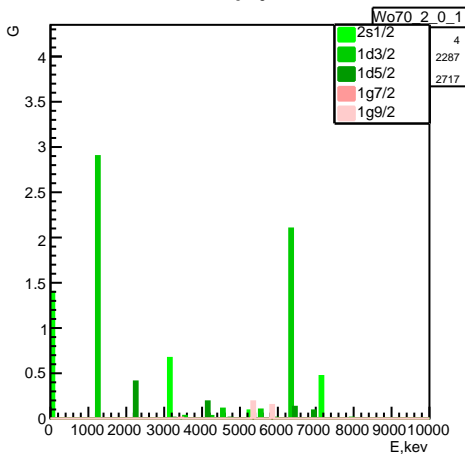
Jo69



Penalty function components



Wo70



Experiment: Jo69 (7) Wo70 (21)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -12963.8 \pm 110.411 \text{ keV}$ $\Delta: -13.3789 \pm 118.597 \text{ keV}$

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12976.2 1d5/2 0.840167 0.960333

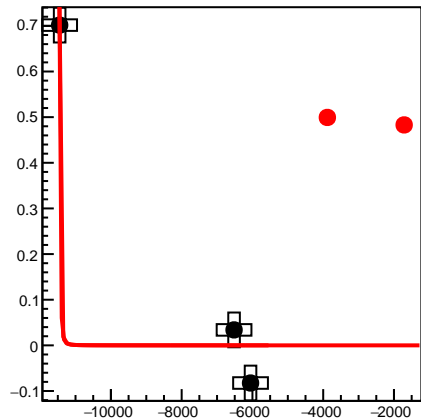
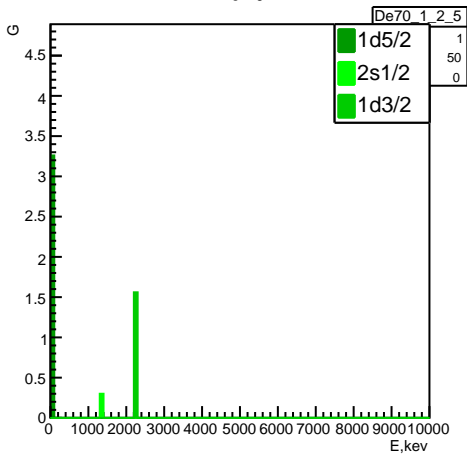
-6479.09 2s1/2 -0.05225 1.5255

-4523.62 1d3/2 -0.12075 1.403

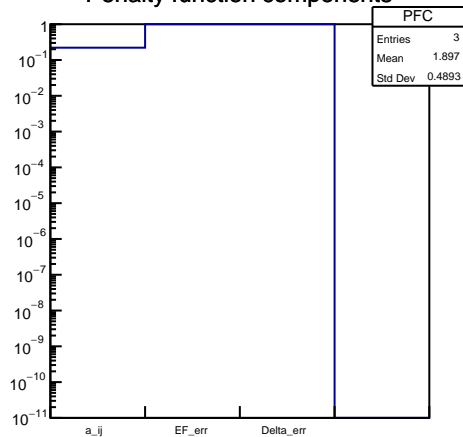
-3882.72 1g7/2 0.499375 0.00125

-1712.22 1g9/2 0.483 0.034

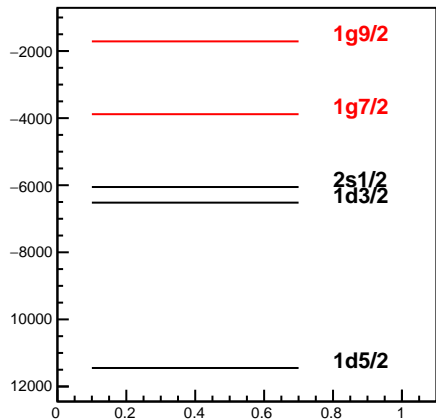
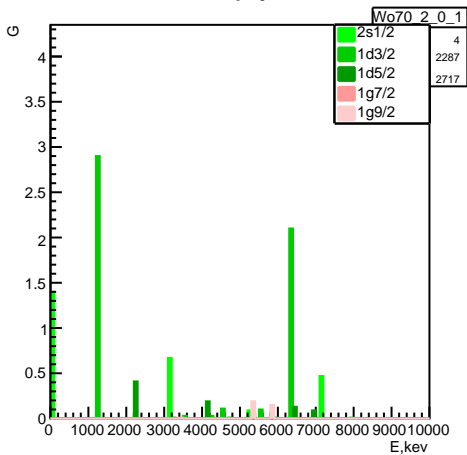
De70



Penalty function components



Wo70



Experiment: De70 (3) Wo70 (21)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -11437 \pm 78.7899 \text{ keV}$ $\Delta: 25.7601 \pm 178.389 \text{ keV}$

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-11448.4 1d5/2 0.701667 0.683333

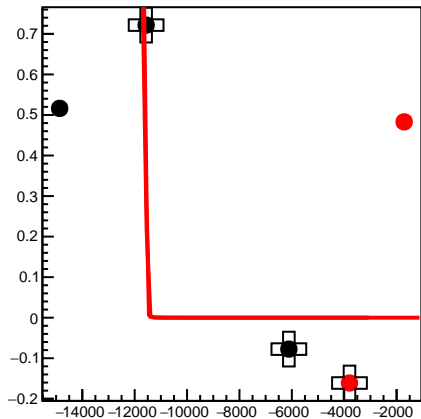
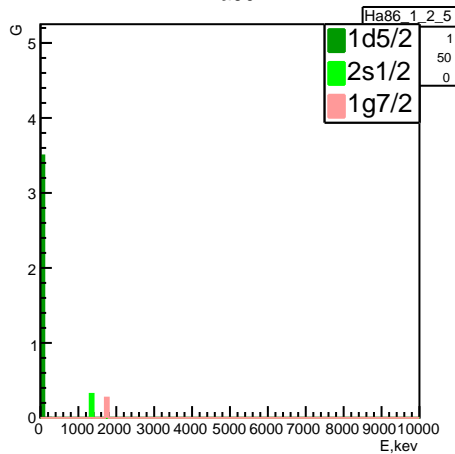
-6053.62 2s1/2 -0.0825 1.465

-6519.34 1d3/2 0.033875 1.71225

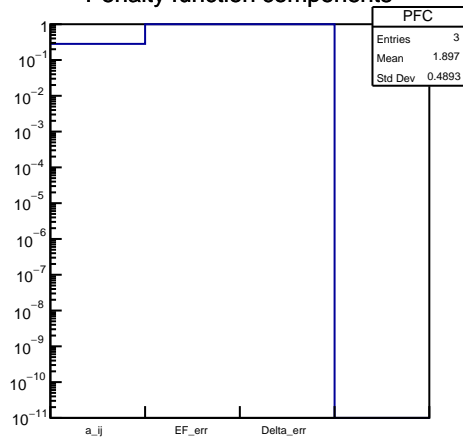
-3882.72 1g7/2 0.499375 0.00125

-1712.22 1g9/2 0.483 0.034

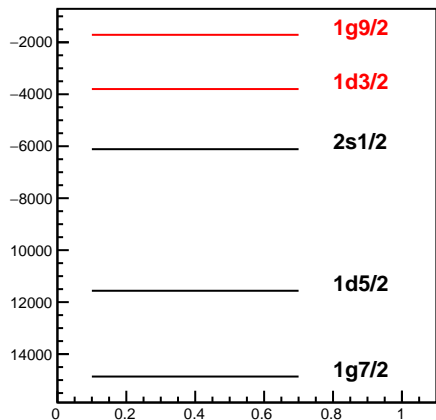
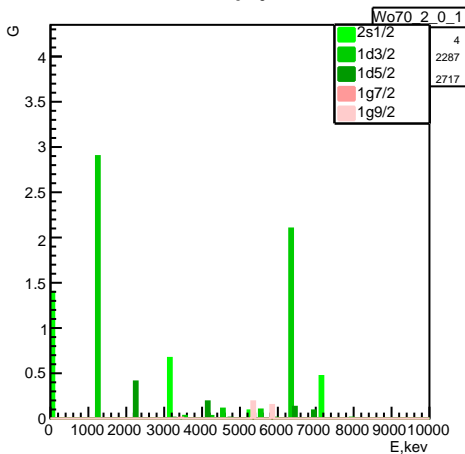
Ha86



Penalty function components



Wo70



Experiment: Ha86 (3) Wo70 (21)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -11554.7 \pm 234.479 \text{ keV}$ $\Delta: 16.3273 \pm 476.352 \text{ keV}$

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-11562.8 1d5/2 0.721667 0.723333

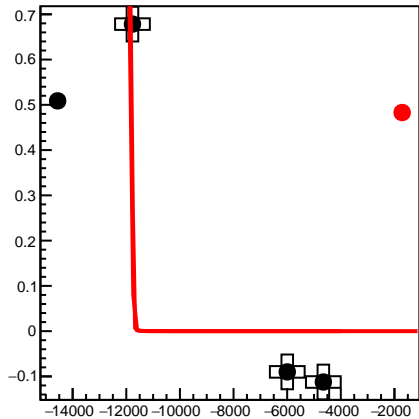
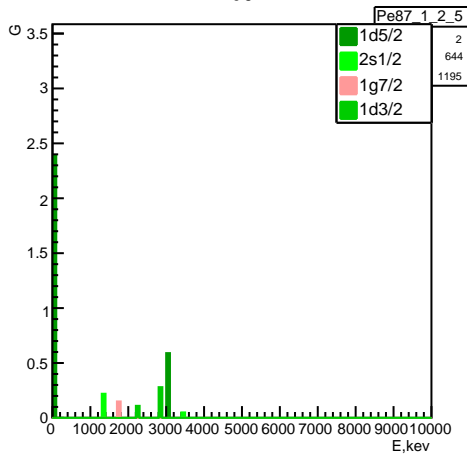
-6113.7 2s1/2 -0.0775 1.475

-14864.5 1g7/2 0.51625 0.035

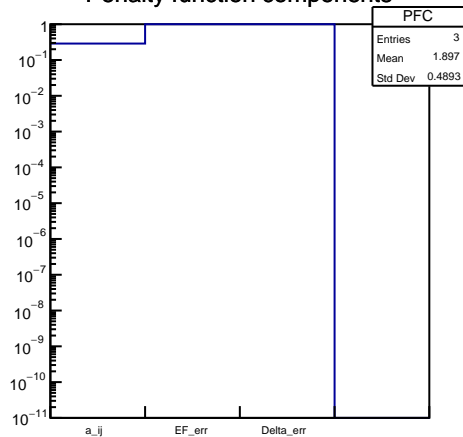
-3799.39 1d3/2 -0.161125 1.32225

-1712.22 1g9/2 0.483 0.034

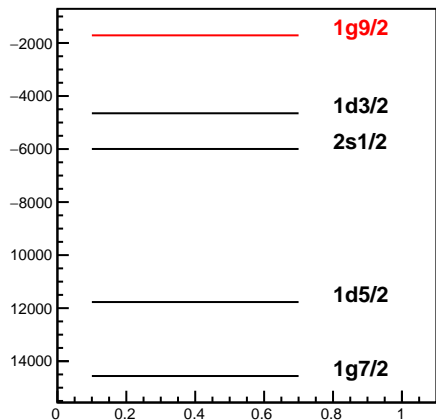
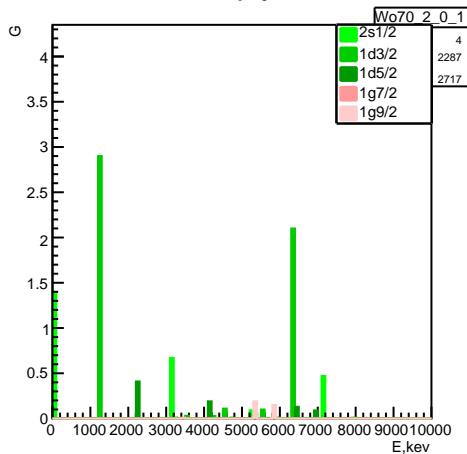
Pe87



Penalty function components



Wo70



Experiment: Pe87 (7) Wo70 (21)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -11763.7 \pm 153.44$ keV $\Delta: 15.6376 \pm 402.905$ keV

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-11769.6 1d5/2 0.678333 0.636667

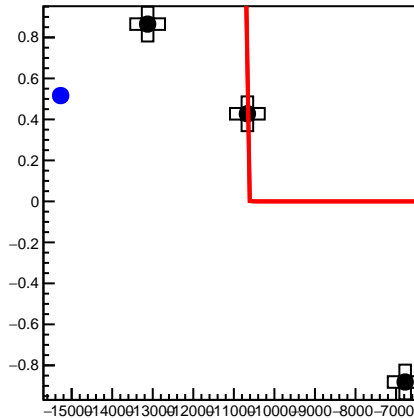
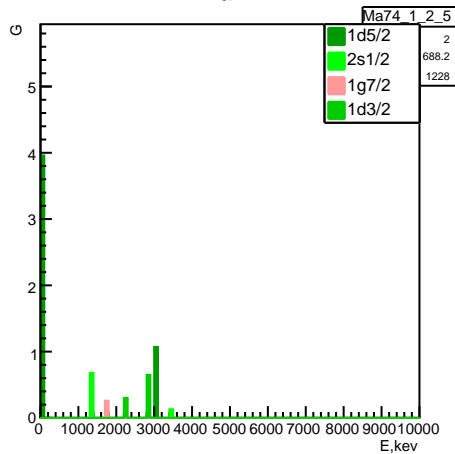
-5997.04 2s1/2 -0.09 1.45

-14559.4 1g7/2 0.50875 0.02

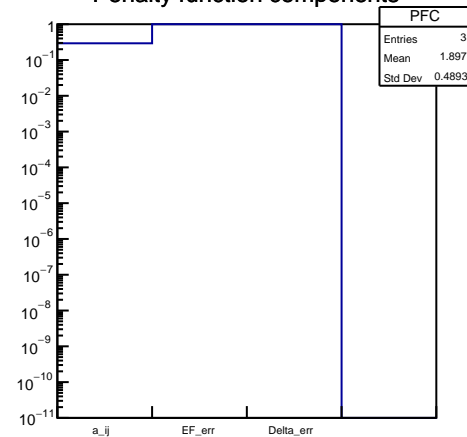
-4651.1 1d3/2 -0.112375 1.41975

-1712.22 1g9/2 0.483 0.034

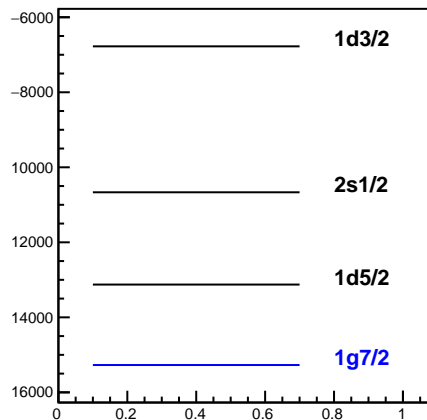
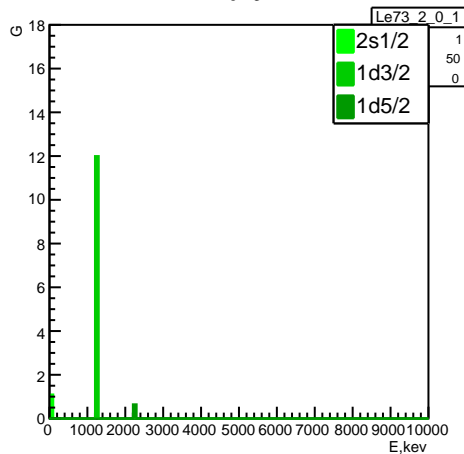
Ma74



Penalty function components



Le73



Experiment: Ma74 (7) Le73 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10667.1 \pm 85.2809 \text{ keV}$ $\Delta: 5.26821 \pm 578.966 \text{ keV}$

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

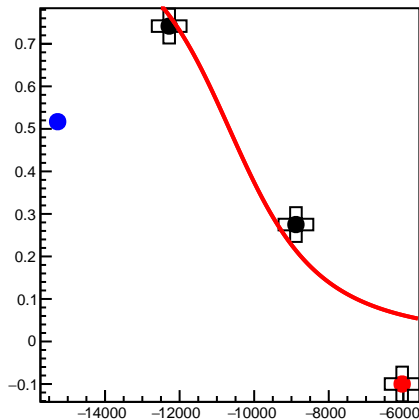
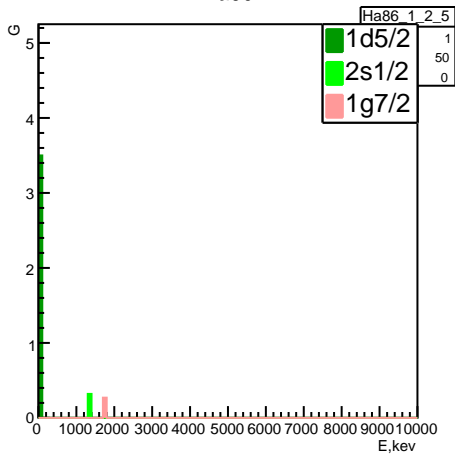
-13126.3 1d5/2 0.865 0.946667

-10666.3 2s1/2 0.4275 0.955

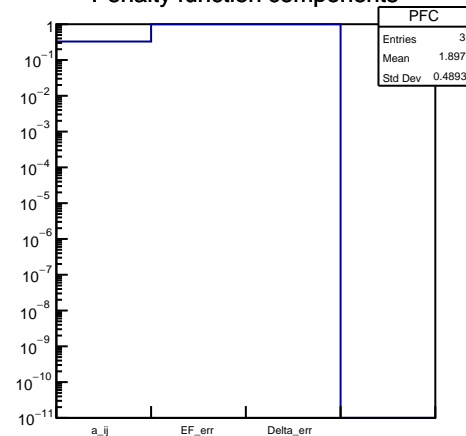
-15271.2 1g7/2 0.51625 0.0325

-6775.7 1d3/2 -0.88125 3.2375

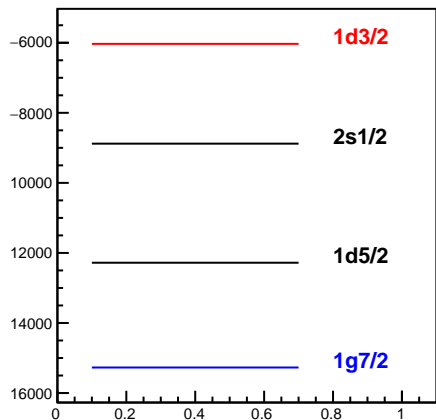
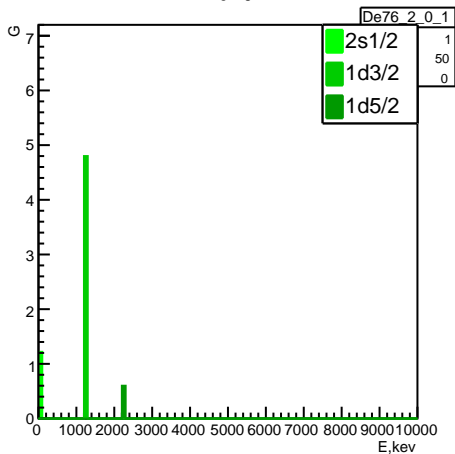
Ha86



Penalty function components



De76



Experiment: Ha86 (3) De76 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -10665.5 \pm 1169.36$ keV $\Delta: 2559.54 \pm 1382.07$ keV

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

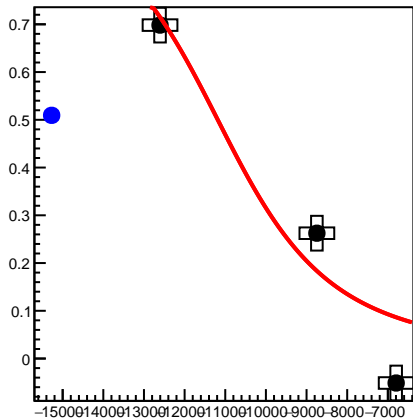
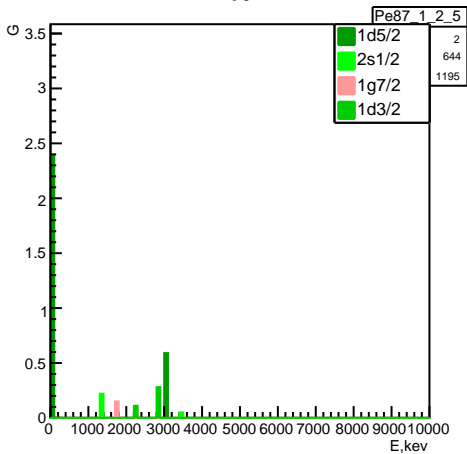
-12279.9 1d5/2 0.741667 0.683333

-8880.21 2s1/2 0.275 0.77

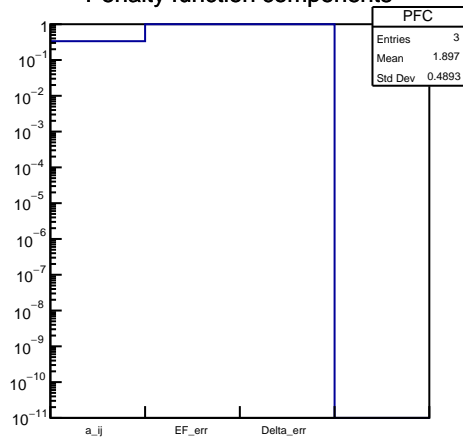
-15271.2 1g7/2 0.516875 0.03375

-6031.19 1d3/2 -0.1 1.2

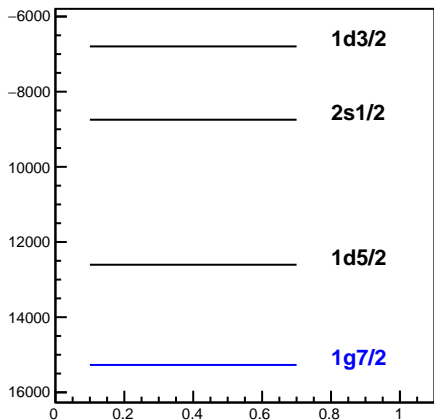
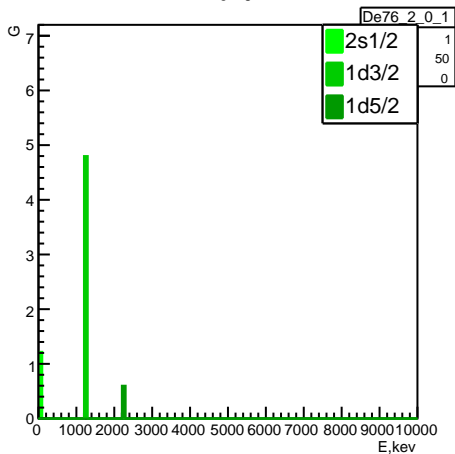
Pe87



Penalty function components



De76



Experiment: Pe87 (7) De76 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -11184.5 \pm 1122.02 keV Δ : 2981.86 \pm 1498.74 keV

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

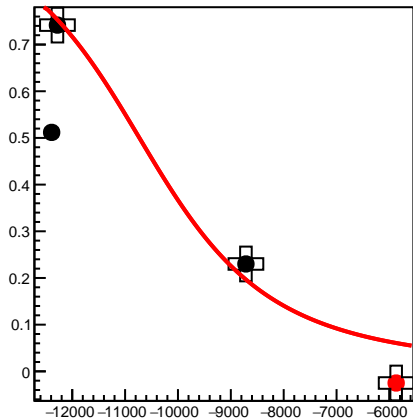
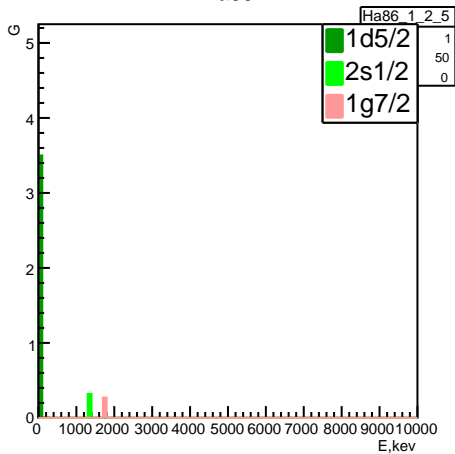
-12604.8 1d5/2 0.698333 0.596667

-8745.99 2s1/2 0.2625 0.745

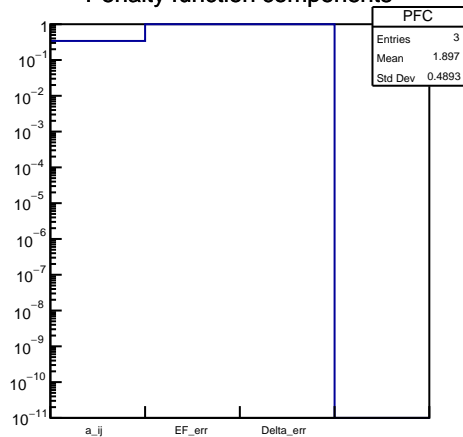
-15271.2 1g7/2 0.509375 0.01875

-6795.45 1d3/2 -0.05125 1.2975

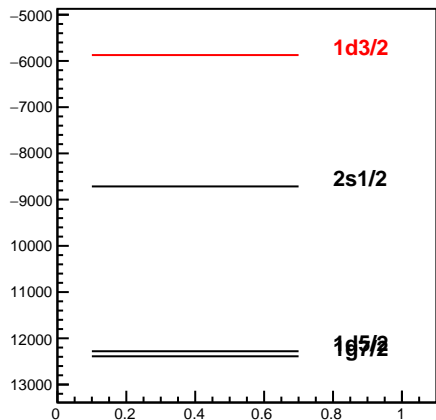
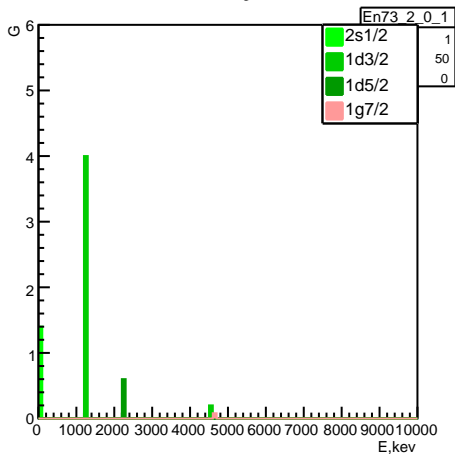
Ha86



Penalty function components



En73



Experiment: Ha86 (3) En73 (5)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10729.2 \pm 616.362 keV Δ : 2639.1 \pm 800.693 keV

penalty: 45248.7

SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

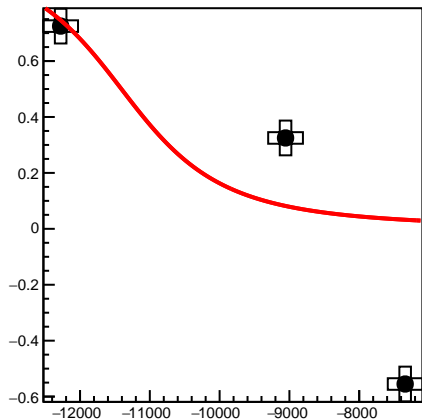
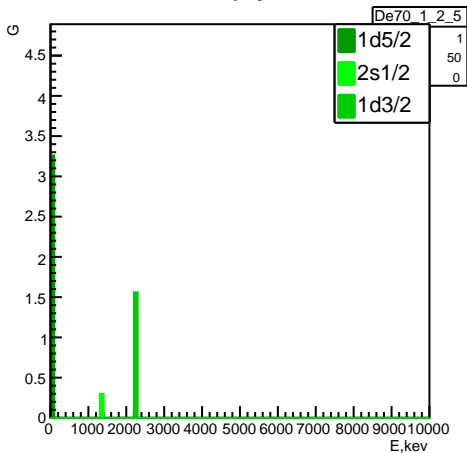
-12279.9 1d5/2 0.741667 0.683333

-8714.56 2s1/2 0.23 0.86

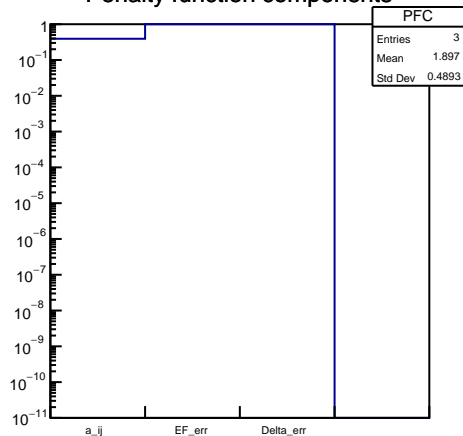
-12389.3 1g7/2 0.511875 0.04375

-5872.8 1d3/2 -0.025 1.05

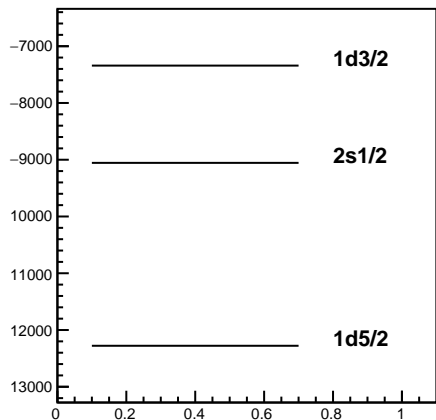
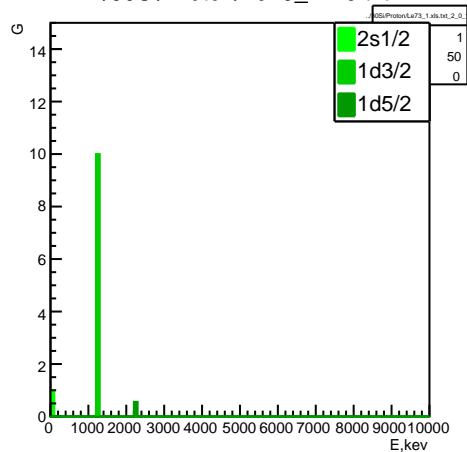
De70



Penalty function components



../30Si/Proton/Le73_1.xls.txt



Experiment: De70 (3) ../30Si/Proton/Le73_1.)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -11406.9 \pm 4105.06$ keV $\Delta: 1540.36 \pm 4488.8$ keV

penalty: 45248.8

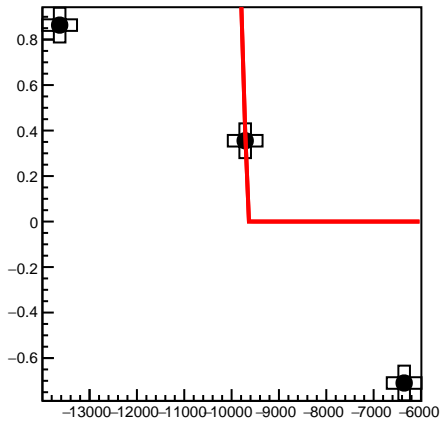
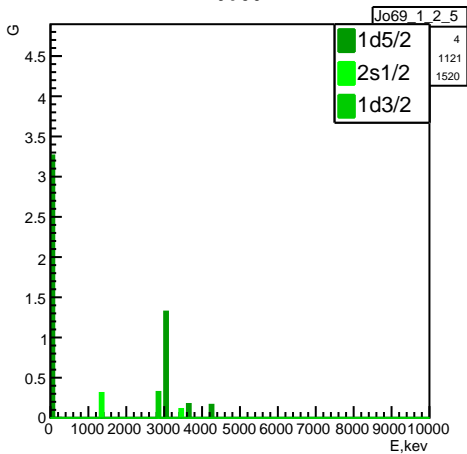
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12277.7 1d5/2 0.725 0.636667

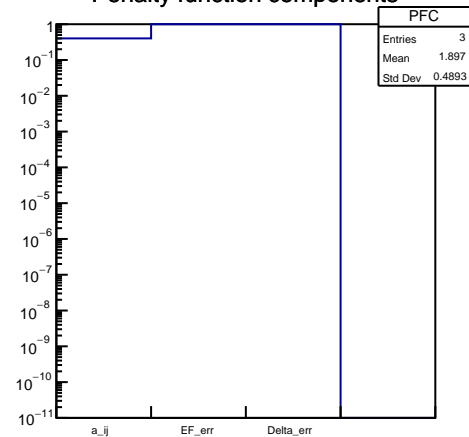
-9055.24 2s1/2 0.325 0.65

-7341.52 1d3/2 -0.555 2.89

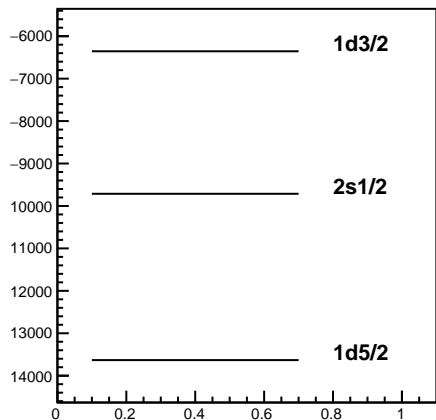
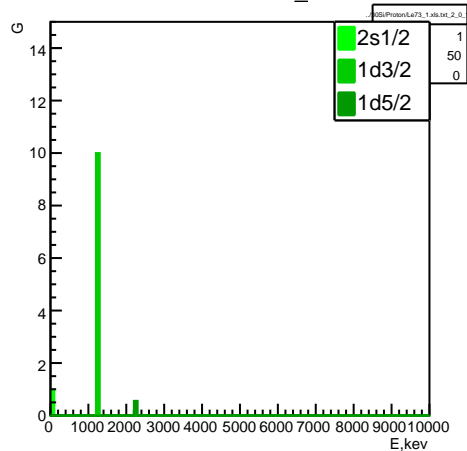
Jo69



Penalty function components



../30Si/Proton/Le73_1.xls.txt



Experiment: Jo69 (7) ../30Si/Proton/Le73_1.x

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -9714.07 \pm 62.8259$ keV $\Delta: 2.9927 \pm 208.093$ keV

penalty: 45248.8

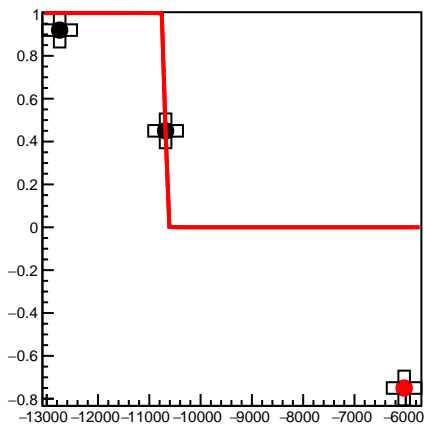
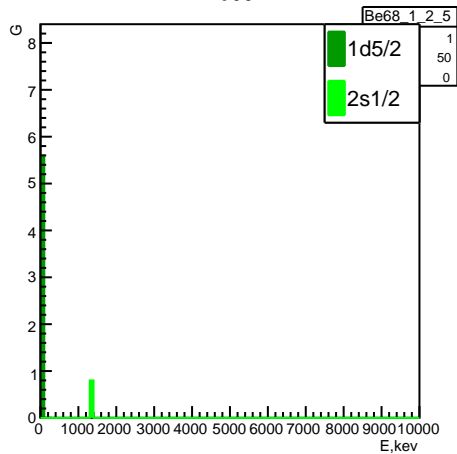
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13632.1 1d5/2 0.8635 0.913667

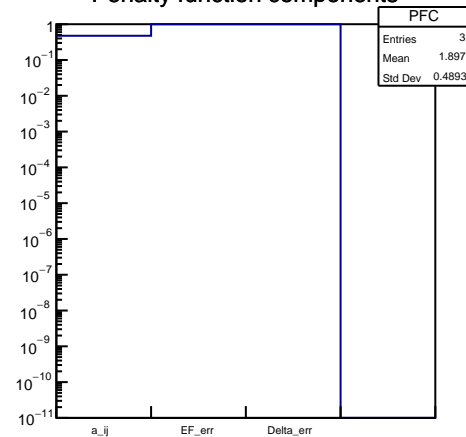
-9713.16 2s1/2 0.35525 0.7105

-6355.08 1d3/2 -0.709625 2.58075

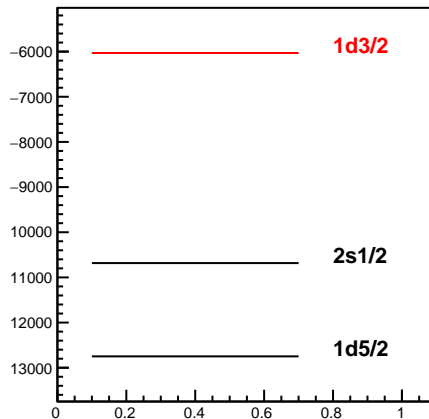
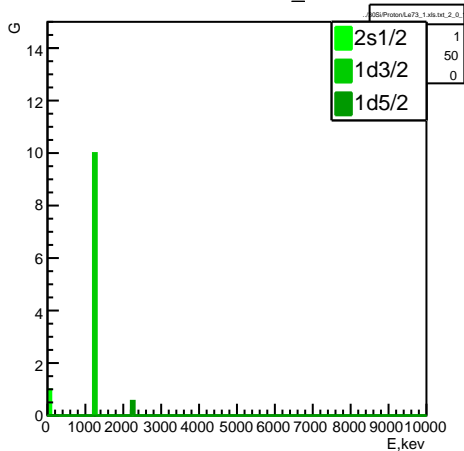
Be68



Penalty function components



../30Si/Proton/Le73_1.xls.txt



Experiment: Be68 (2) ../30Si/Proton/Le73_1.)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10683.7 \pm 129.814 keV Δ : 7.895 \pm 1297.44 keV

penalty: 45248.8

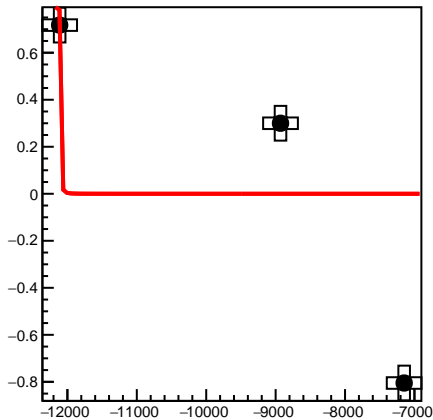
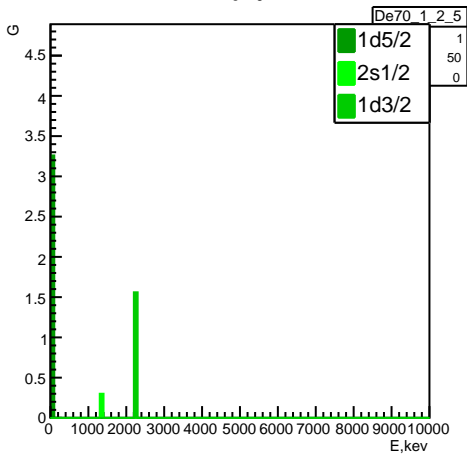
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12748.4 1d5/2 0.92 1.02667

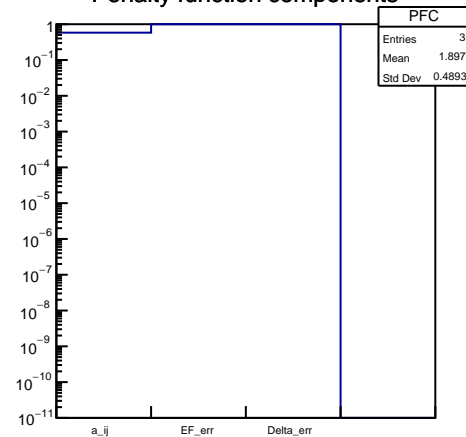
-10682.9 2s1/2 0.45 0.9

-6031.19 1d3/2 -0.75 2.5

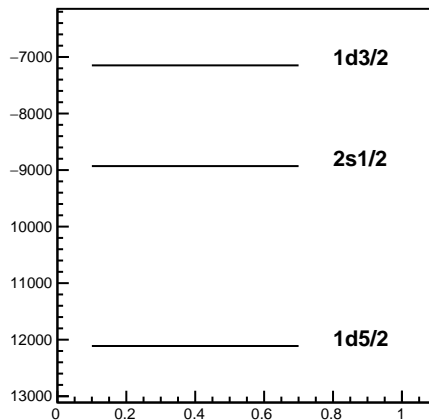
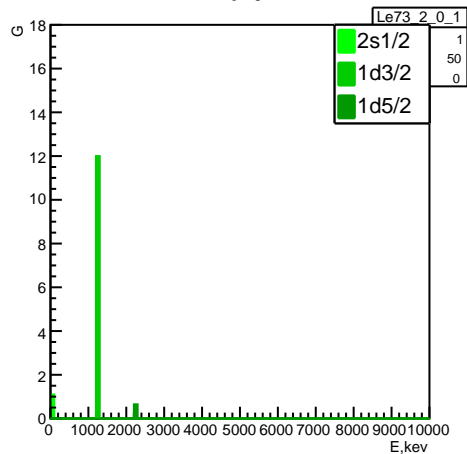
De70



Penalty function components



Le73



Experiment: De70 (3) Le73 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -12105.7 \pm 337.294 keV Δ : 12.4056 \pm 697.803 keV

penalty: 45248.8

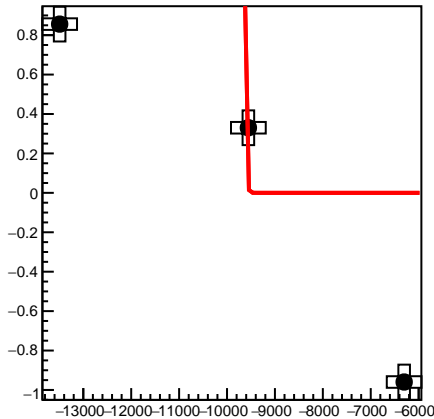
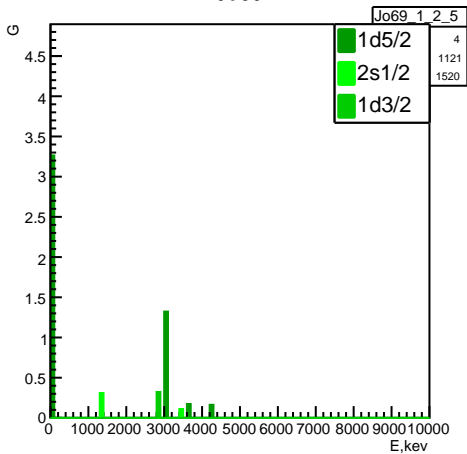
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12111.7 1d5/2 0.7175 0.651667

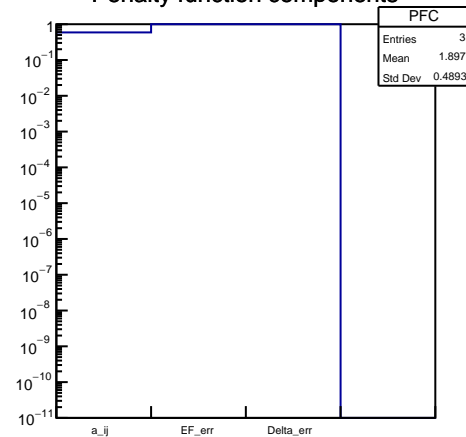
-8929.67 2s1/2 0.3 0.7

-7148.25 1d3/2 -0.805 3.39

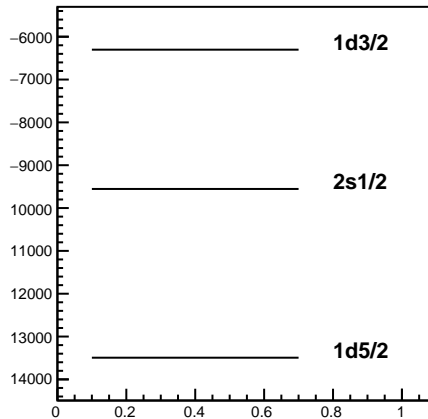
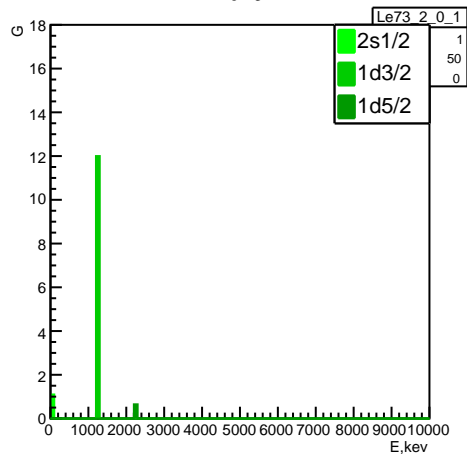
Jo69



Penalty function components



Le73



Experiment: Jo69 (7) Le73 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

 $E_F: -9555.52 \pm 157.44$ keV $\Delta: 3.29152 \pm 436.107$ keV

penalty: 45248.8

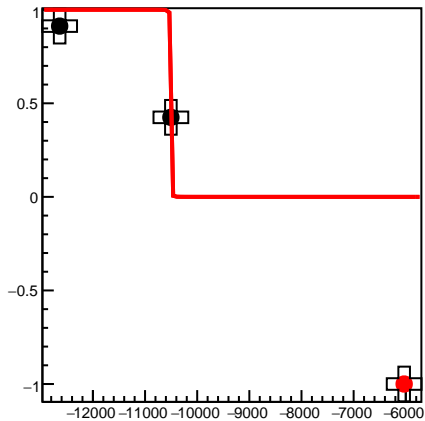
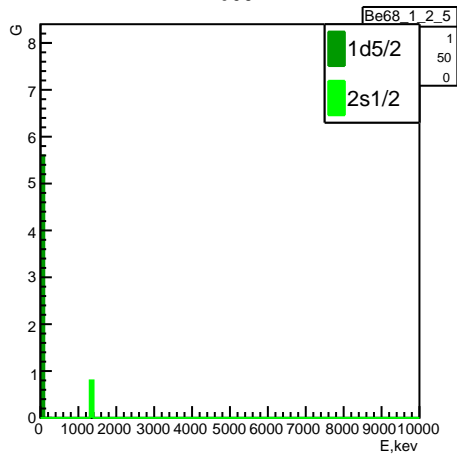
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13493.7 1d5/2 0.856 0.928667

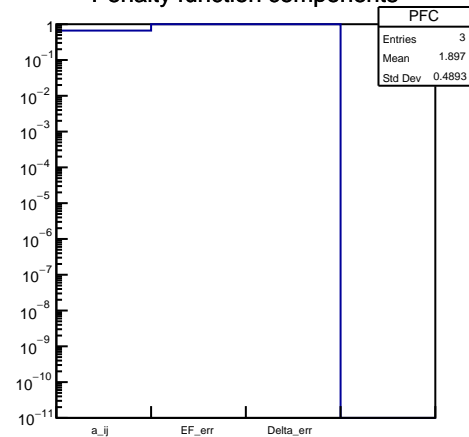
-9554.33 2s1/2 0.33025 0.7605

-6302.52 1d3/2 -0.959625 3.08075

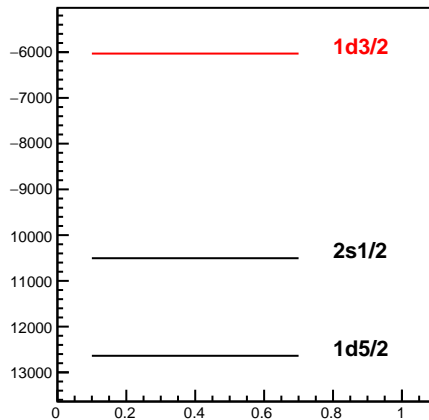
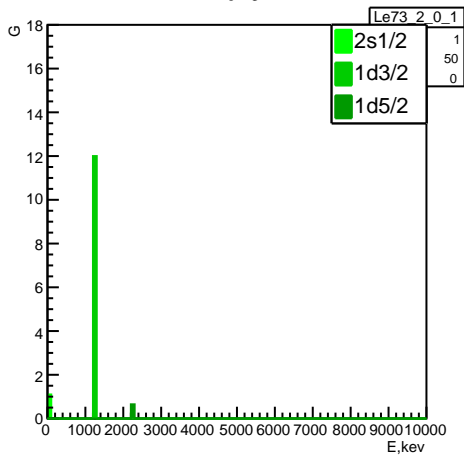
Be68



Penalty function components



Le73



Experiment: Be68 (2) Le73 (3)

proton transfer

p separation energy A:13516.9, A+1: 7297.3;

E_F: -10505.8 \pm 261.824 keV Δ : -6.95617 \pm 1730.66 keV

penalty: 45248.9

SPE, keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12637.8 1d5/2 0.9125 1.04167

-10504.8 2s1/2 0.425 0.95

-6031.19 1d3/2 -1 3