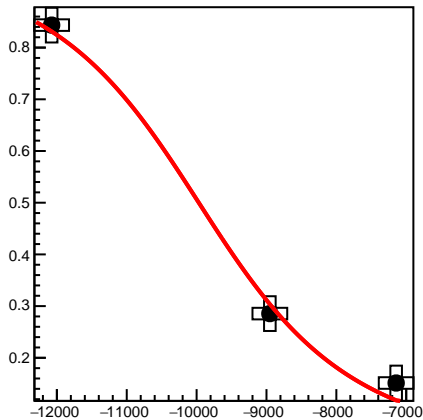
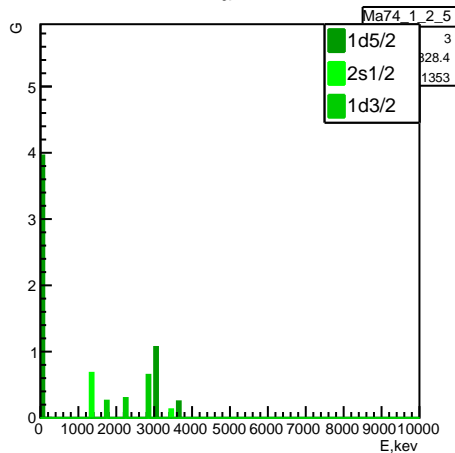
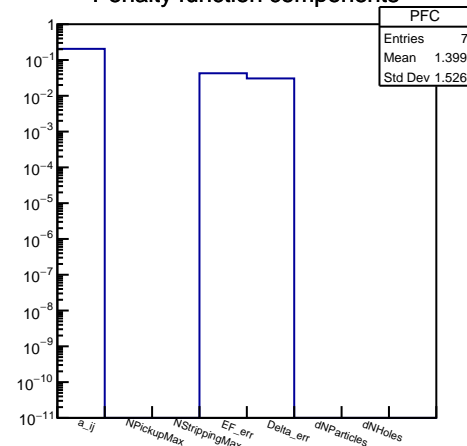


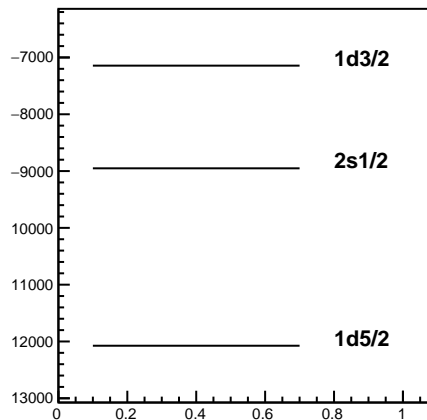
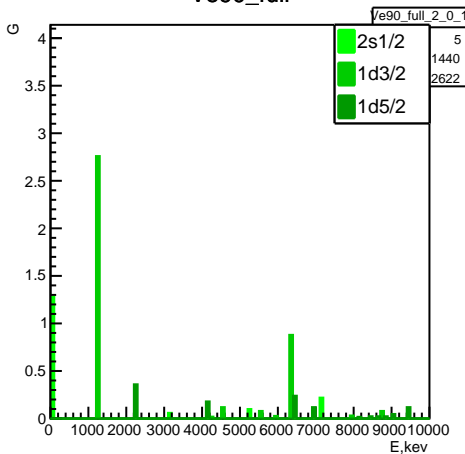
Ma74



Penalty function components



Ve90_full



Experiment: Ma74 (8) Ve90_full (23)

proton transfer

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

 $E_F: -9968.72 \pm 213.208 \text{ keV}$ $\Delta: 2382.52 \pm 346.951 \text{ keV}$

penalty: 0.0534598

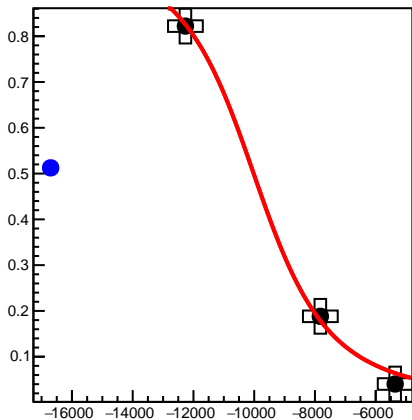
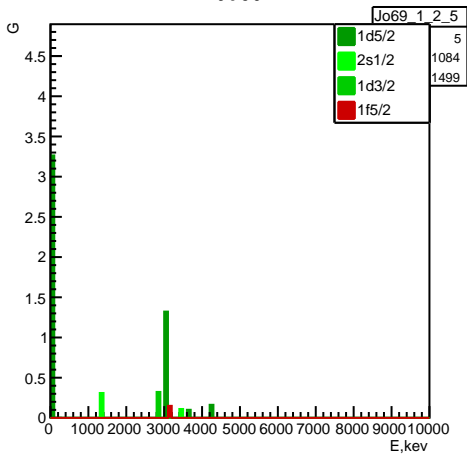
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12074.9 1d5/2 0.8435 1.073

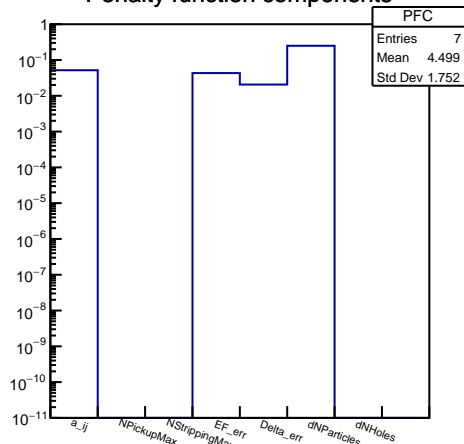
-8951.66 2s1/2 0.2855 1.239

-7143.92 1d3/2 0.15125 1.3025

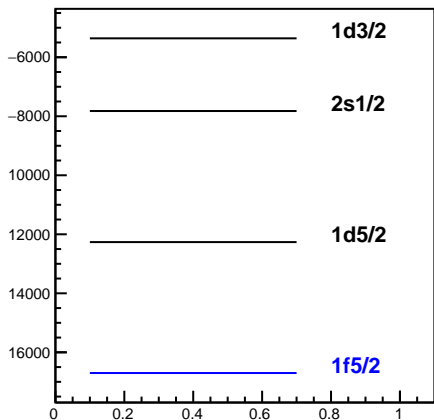
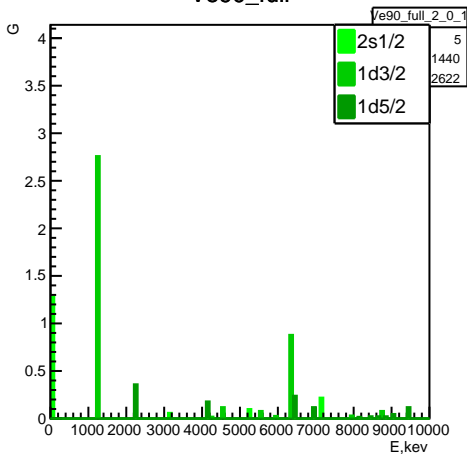
Jo69



Penalty function components



Ve90_full



Experiment: Jo69 (9) Ve90_full (23)

proton transfer

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

 E_F : -10018.1 \pm 215.572 keV Δ : -2618.22 \pm 234.103 keV

penalty: 0.0702882

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

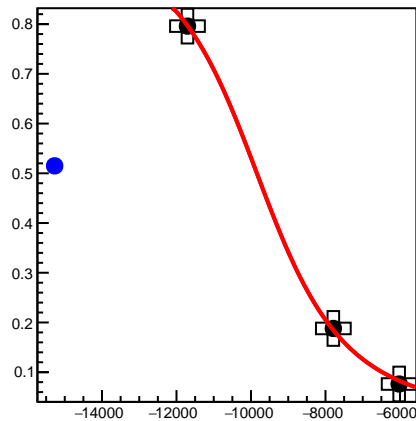
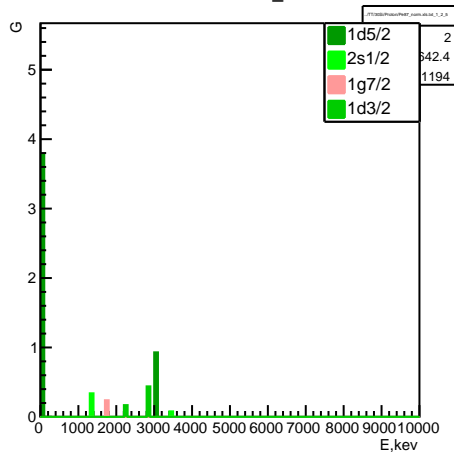
-12264.4 1d5/2 0.822083 1.03017

-7822.7 2s1/2 0.18825 1.0445

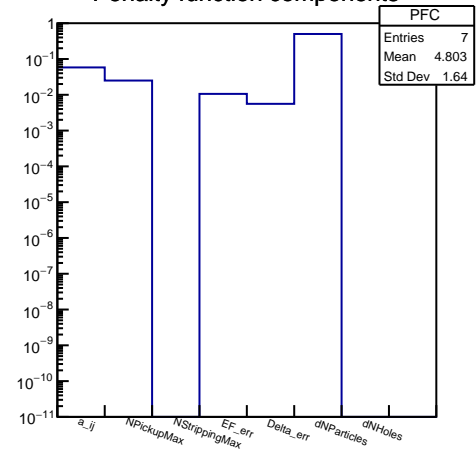
-5359.68 1d3/2 0.040375 1.08075

-16701.5 1f5/2 0.5125 4.68715e-310

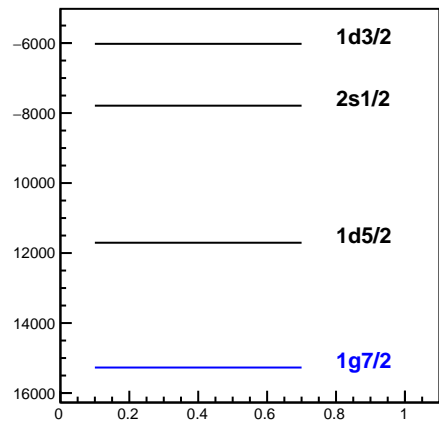
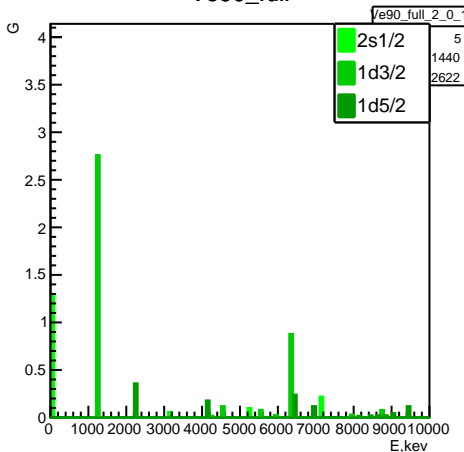
../TT/30Si/Proton/Pe87_norm.xls.txt



Penalty function components



Ve90_full



Experiment: ../TT/30Si/Proton/Pe87_norm.xls

proton transfer

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

E_F: -9841.8 \pm 53.0487 keV

Δ : 2524.43 \pm 63.4588 keV

penalty: 0.115261

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

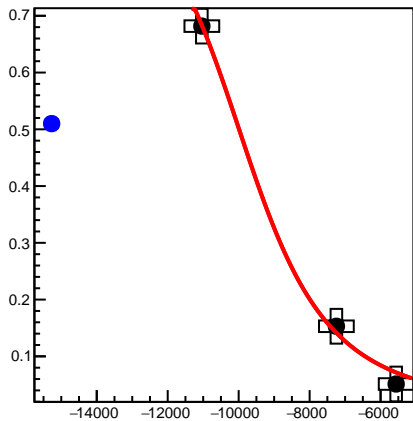
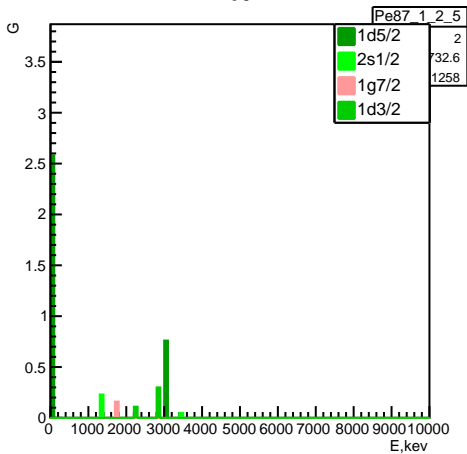
-11705.3 1d5/2 0.796 0.978

-7789.09 2s1/2 0.188 1.044

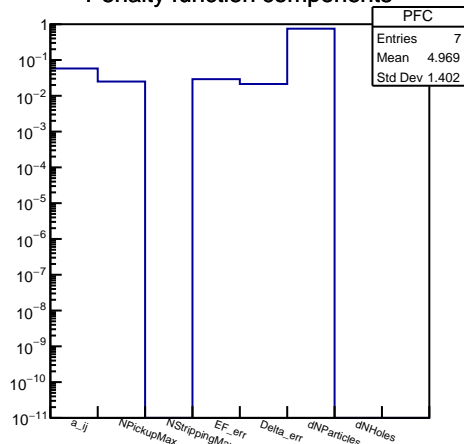
-15271.2 1g7/2 0.515 1.1525

-6022.26 1d3/2 0.07625 5.77563e-321

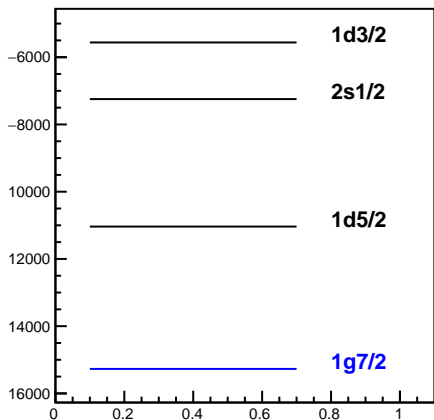
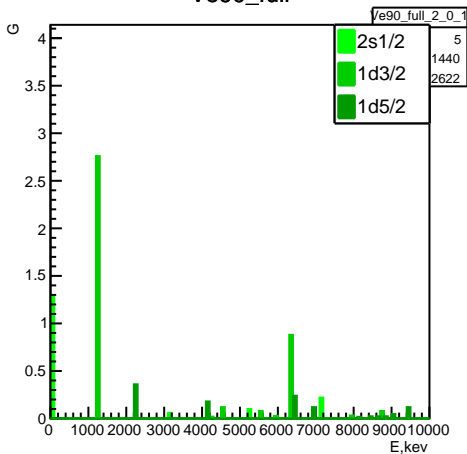
Pe87



Penalty function components



Ve90_full



Experiment: Pe87 (7) Ve90_full (23)

proton transfer

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

 $E_F: -9988.38 \pm 145.912 \text{ keV}$ $\Delta: -2663.26 \pm 242.333 \text{ keV}$

penalty: 0.169893

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

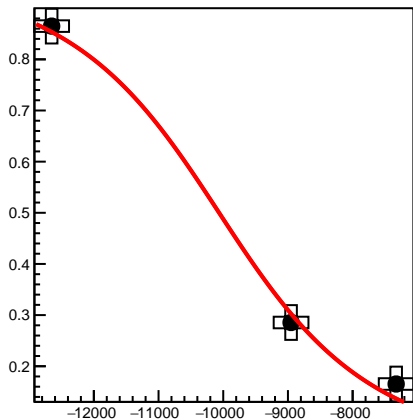
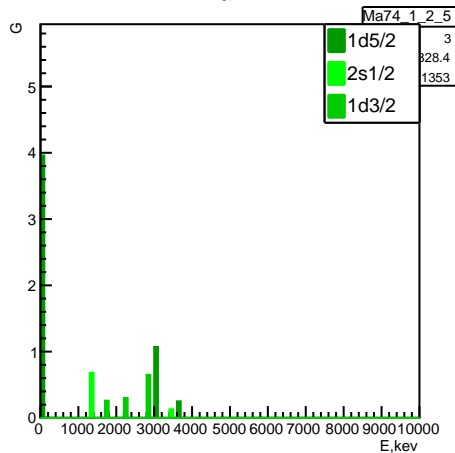
-11037.8 1d5/2 0.681833 0.749667

-7245.63 2s1/2 0.153 0.974

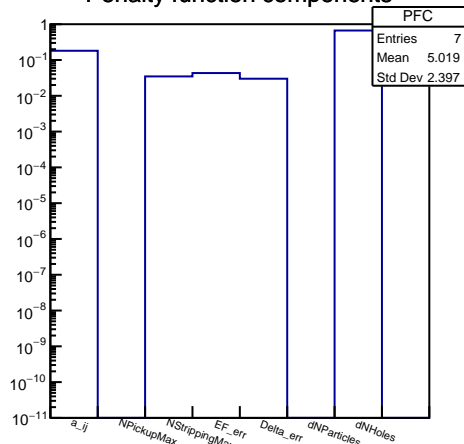
-15271.2 1g7/2 0.51 1.1025

-5561.14 1d3/2 0.05125 5.58294e-322

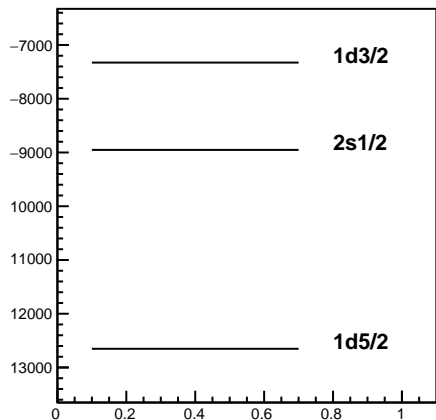
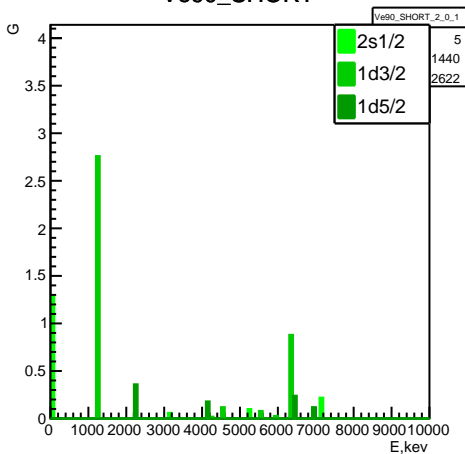
Ma74



Penalty function components



Ve90_SHORT



Experiment: Ma74 (8) Ve90_SHORT (15)

proton transfer

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

 $E_F: -10063.7 \pm 216.195$ keV $\Delta: 2588.47 \pm 340.734$ keV

penalty: 0.183812

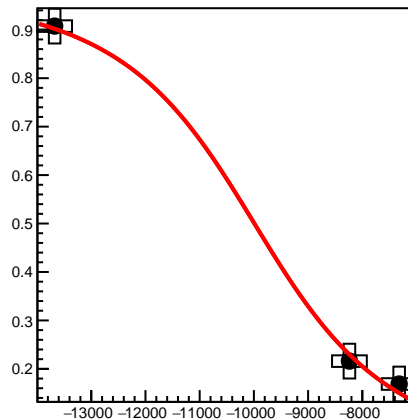
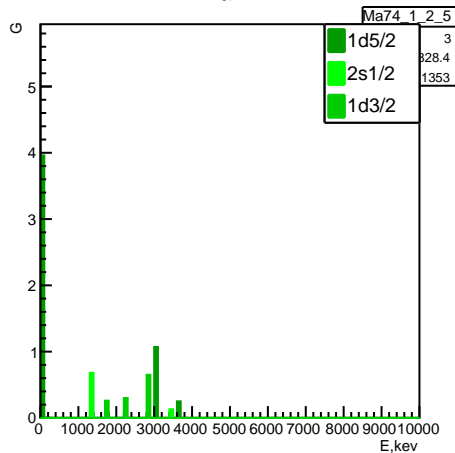
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12652.1 1d5/2 0.865 1.03

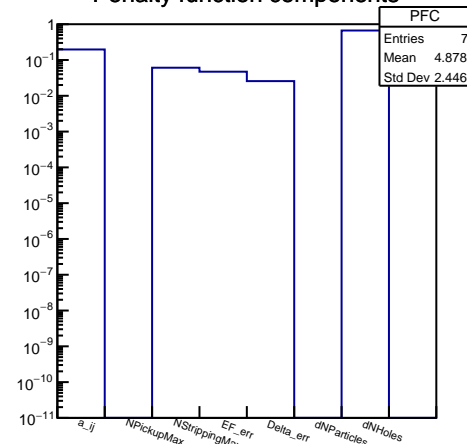
-8951.66 2s1/2 0.2855 1.239

-7327.42 1d3/2 0.16525 1.2745

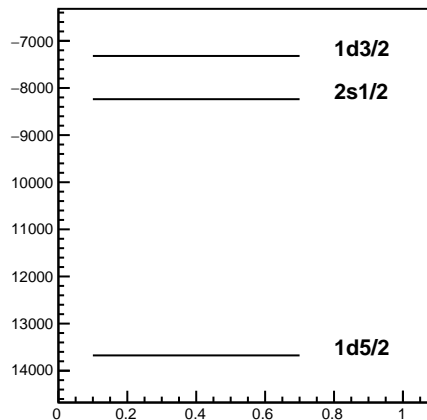
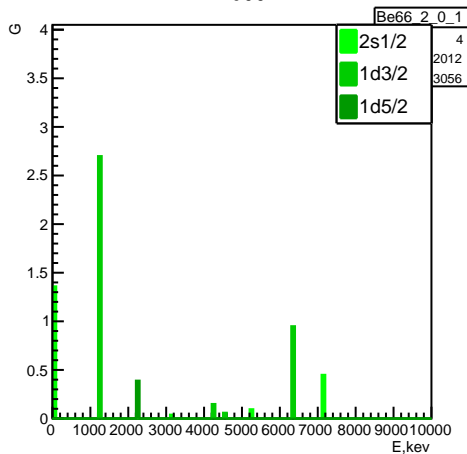
Ma74



Penalty function components



Be66



Experiment: Ma74 (8) Be66 (9)

proton transfer

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

 $E_F: -9990.98 \pm 235.833$ keV $\Delta: -2727.21 \pm 292.013$ keV

penalty: 0.191771

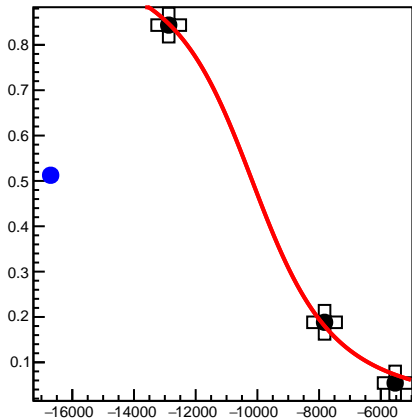
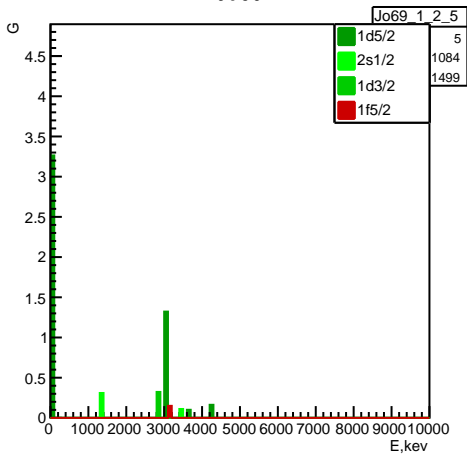
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-13675.2 1d5/2 0.9075 0.945

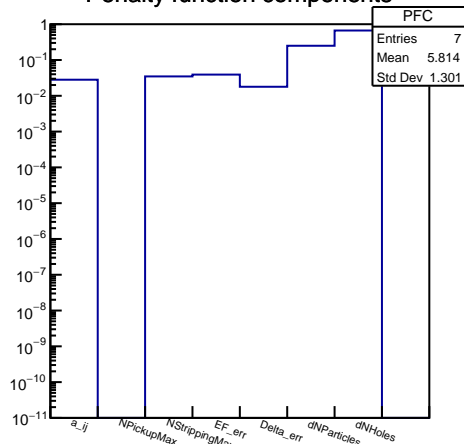
-8237.6 2s1/2 0.216 1.378

-7320.37 1d3/2 0.16875 1.2675

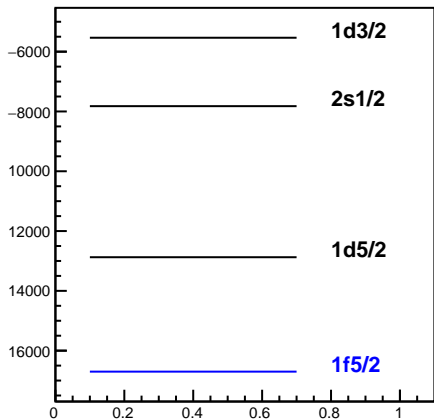
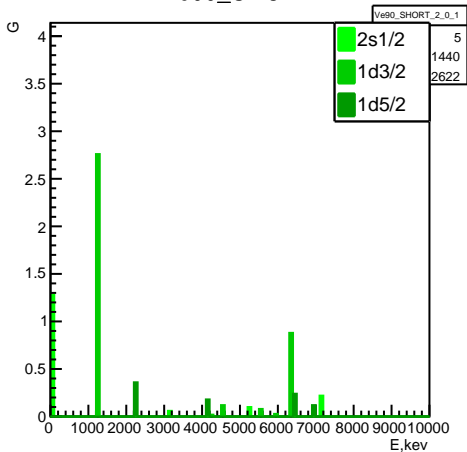
Jo69



Penalty function components



Ve90_SHORT



Experiment: Jo69 (9) Ve90_SHORT (15)

proton transfer

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

 $E_F: -10166.9 \pm 195.729 \text{ keV}$ $\Delta: 2815.56 \pm 202.966 \text{ keV}$

penalty: 0.199341

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

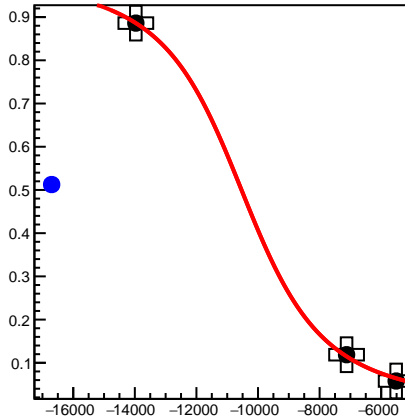
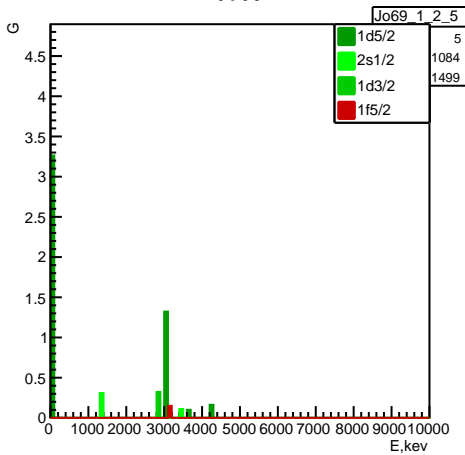
-12875 1d5/2 0.843583 0.987167

-7822.7 2s1/2 0.18825 1.0445

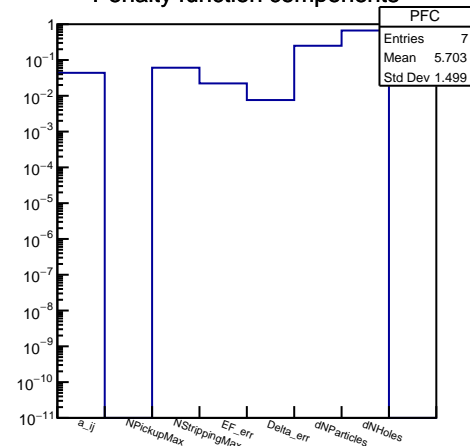
-5534.38 1d3/2 0.054375 1.05275

-16701.5 1f5/2 0.5125 3.21143e-322

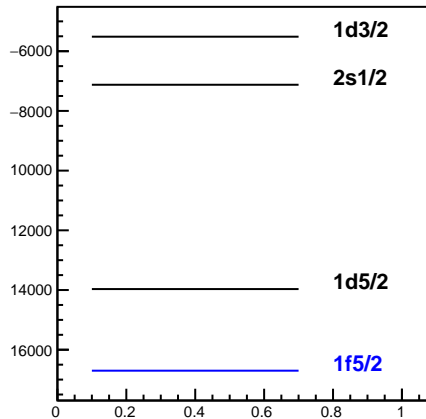
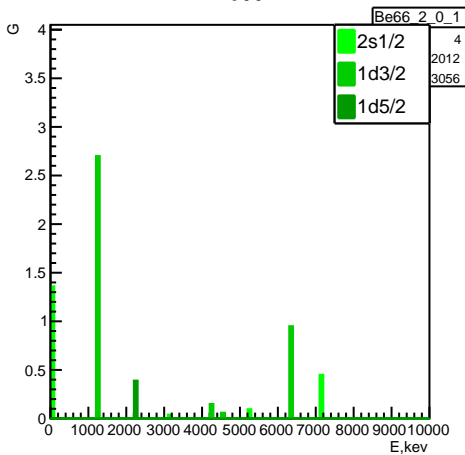
Jo69



Penalty function components



Be66



Experiment: Jo69 (9) Be66 (9)

proton transfer

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

E_F: -10535.7 \pm 111.004 keV Δ : 2823.81 \pm 86.4274 keV

penalty: 0.202141

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

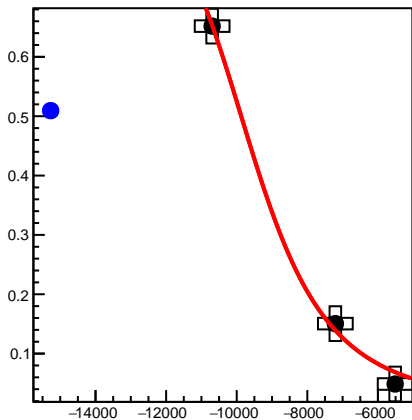
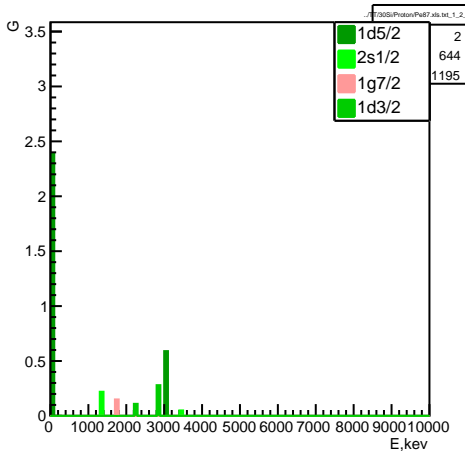
-13967.6 1d5/2 0.886083 0.902167

-7123.88 2s1/2 0.11875 1.1835

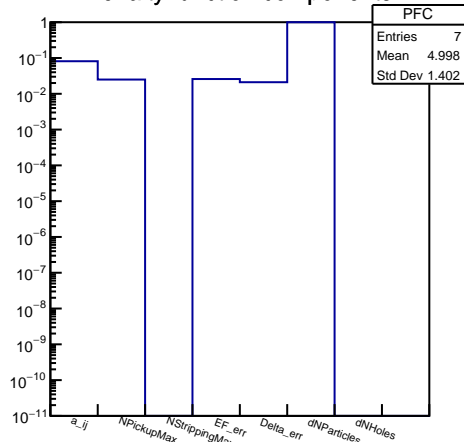
-5513.83 1d3/2 0.057875 1.04575

-16701.5 1f5/2 0.5125 3.21143e-322

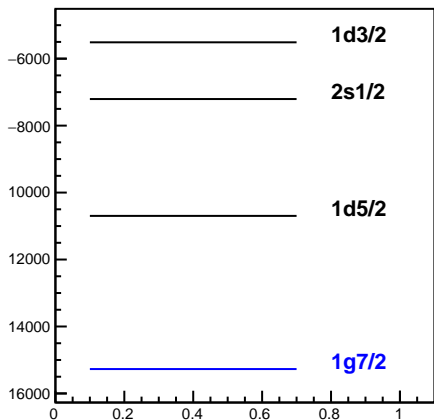
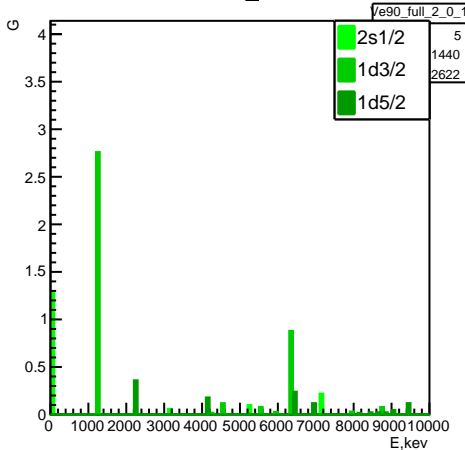
../TT/30Si/Proton/Pe87.xls.txt



Penalty function components



Ve90_full



Experiment: ../TT/30Si/Proton/Pe87.xls.txt (7
proton transfer

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

E_F : -9872.8 \pm 129.366 keV

Δ : -2556.63 \pm 239.325 keV

penalty: 0.22177

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

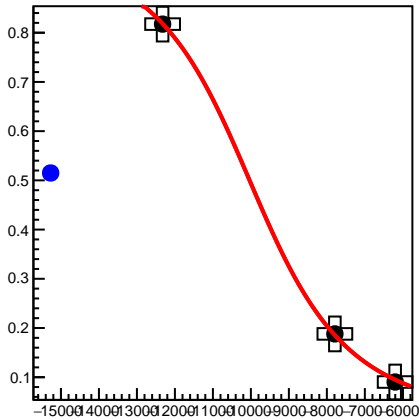
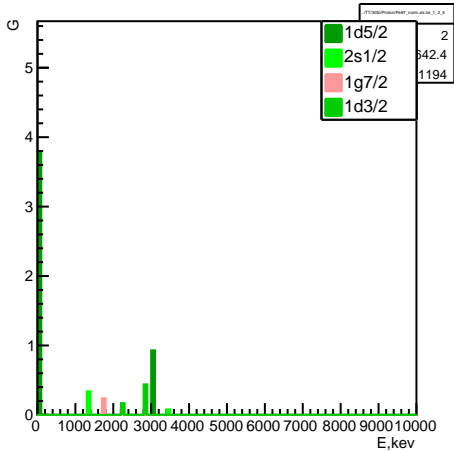
-10696.4 1d5/2 0.651833 0.689667

-7206.05 2s1/2 0.1505 0.969

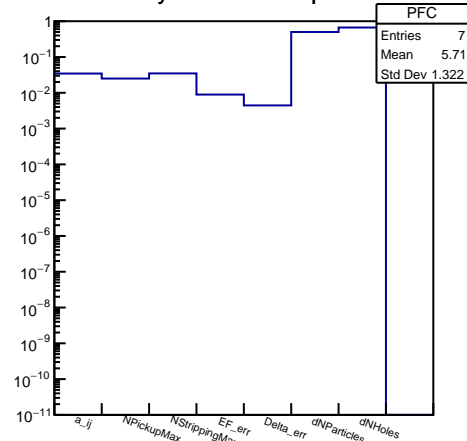
-15271.2 1g7/2 0.509375 1.0975

-5511.84 1d3/2 0.04875 3.21143e-322

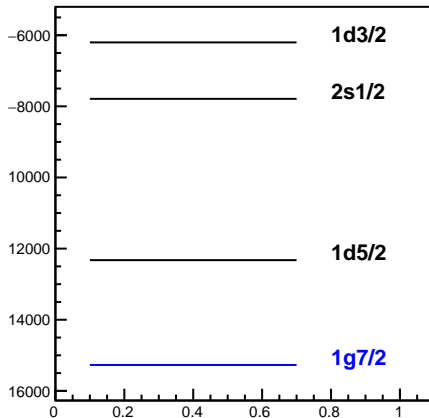
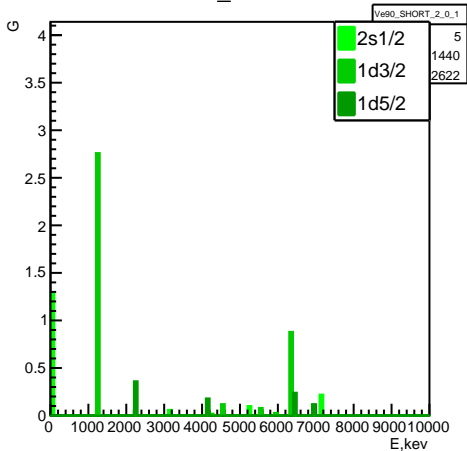
../TT/30Si/Proton/Pe87_norm.xls.txt



Penalty function components



Ve90_SHORT



Experiment: ../TT/30Si/Proton/Pe87_norm.xls

proton transfer

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

E_F: -10034 ± 44.6149 keV

Δ: 2772.67 ± 50.4 keV

penalty: 0.245058

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

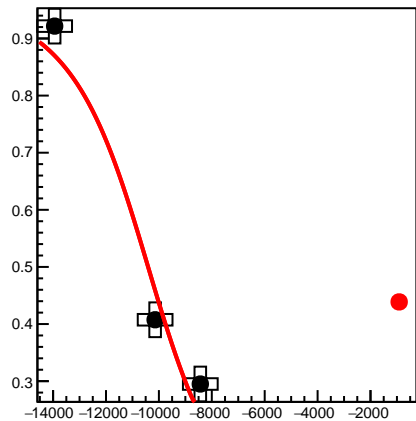
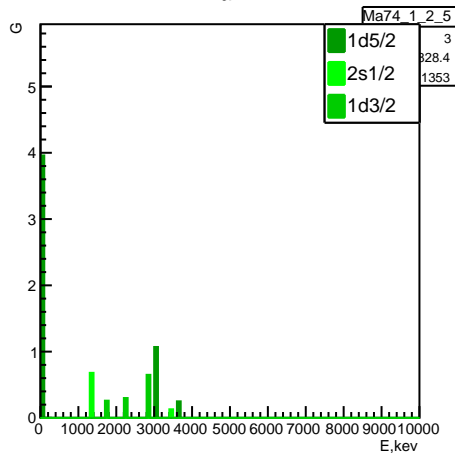
-12324.2 1d5/2 0.8175 0.935

-7789.09 2s1/2 0.188 1.044

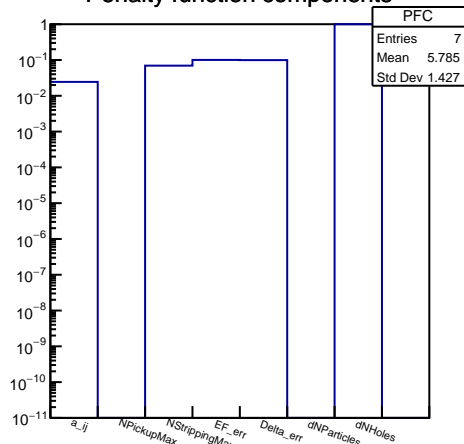
-15271.2 1g7/2 0.515 1.1245

-6202.32 1d3/2 0.09025 3.21143e-322

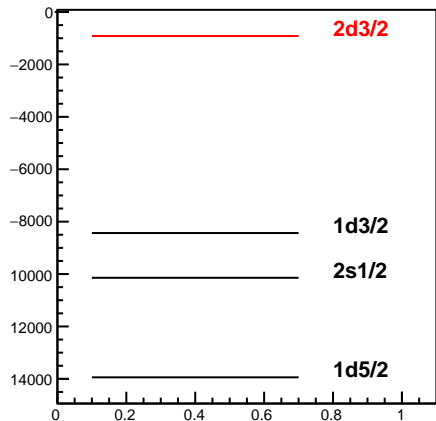
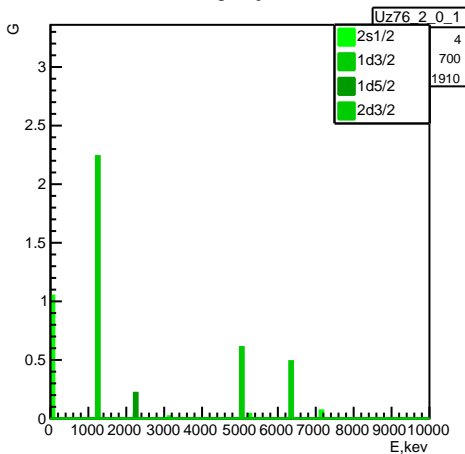
Ma74



Penalty function components



Uz76



Experiment: Ma74 (8) Uz76 (8)

proton transfer

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

E_F: -10407.8 \pm 502.65 keV Δ : 3213.09 \pm 1127.42 keV

penalty: 0.248795

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

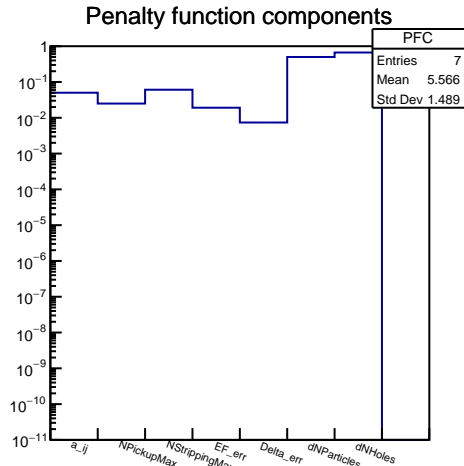
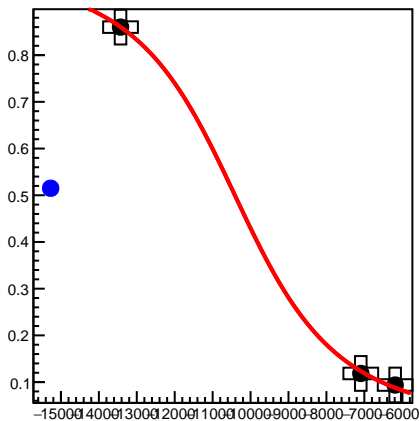
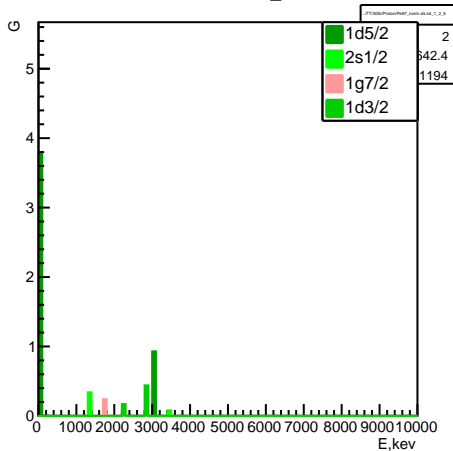
-13941.3 1d5/2 0.921667 0.916667

-10142.6 2s1/2 0.4075 0.995

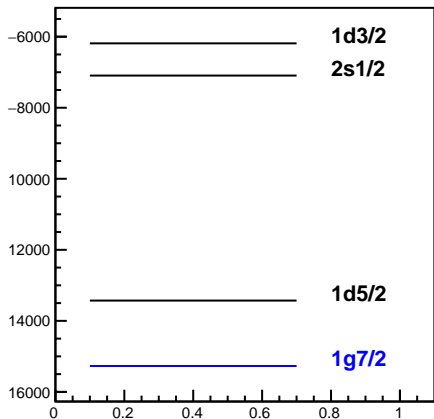
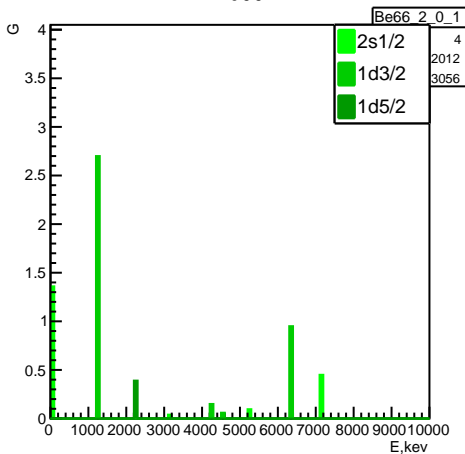
-8434.4 1d3/2 0.295 1.015

-916.525 2d3/2 0.43875 5.58294e-322

../TT/30Si/Proton/Pe87_norm.xls.txt



Be66



Experiment: ../TT/30Si/Proton/Pe87_norm.xls

proton transfer

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

E_F: -10413.2 ± 95.7165 keV

Δ: 2901.54 ± 83.803 keV

penalty: 0.255617

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

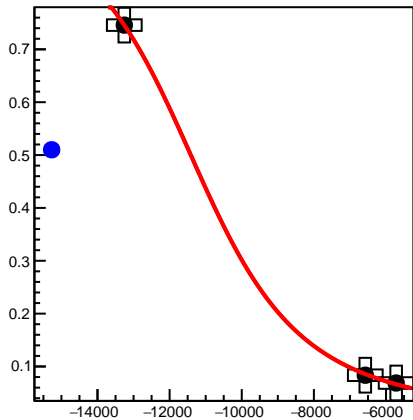
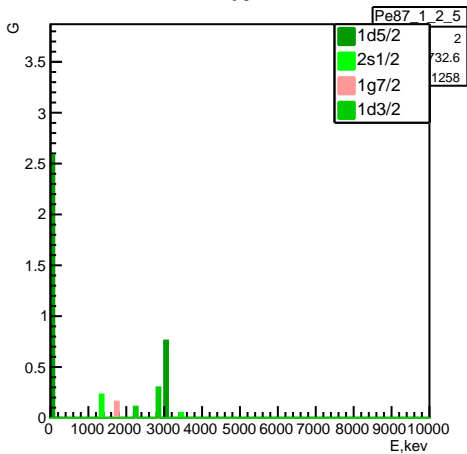
-13428.8 1d5/2 0.86 0.85

-7093.93 2s1/2 0.1185 1.183

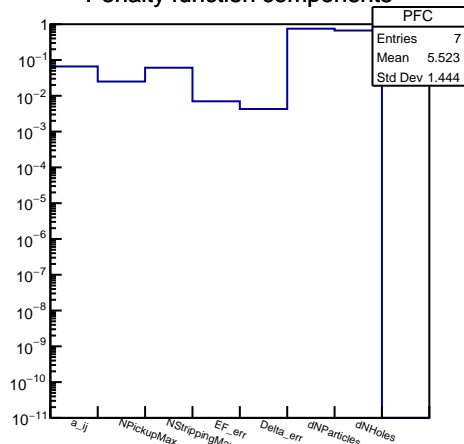
-15271.2 1g7/2 0.515 1.1175

-6187.26 1d3/2 0.09375 3.21143e-322

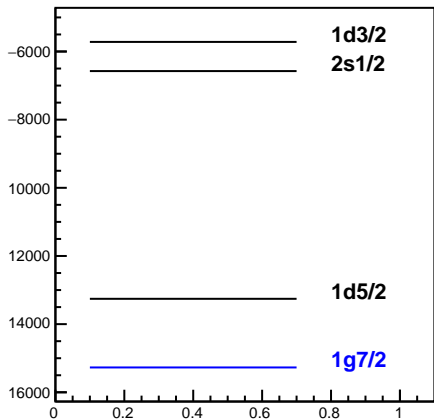
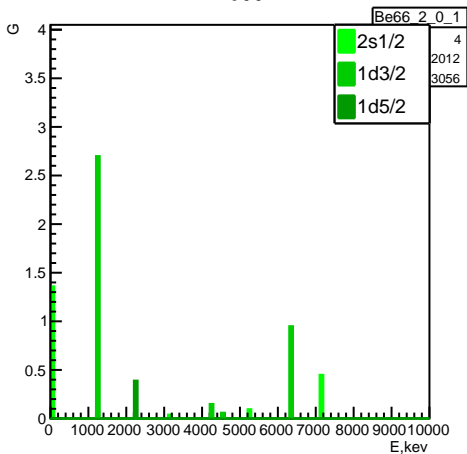
Pe87



Penalty function components



Be66



Experiment: Pe87 (7) Be66 (9)

proton transfer

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

E_F: -11412.5 ± 35.096 keV

Δ: 3267.73 ± 48.5391 keV

penalty: 0.303802

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

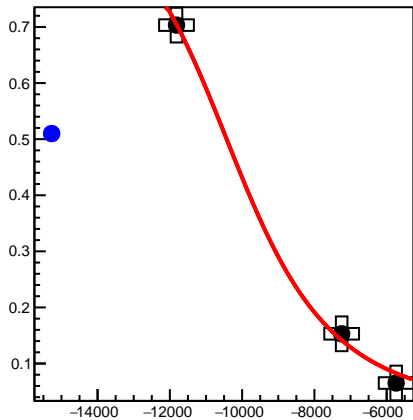
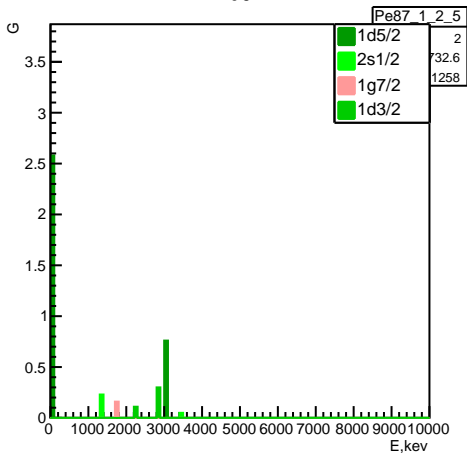
-13256.9 1d5/2 0.745833 0.621667

-6574.61 2s1/2 0.0835 1.113

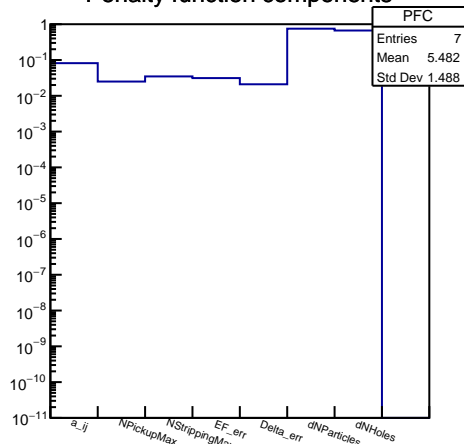
-15271.2 1g7/2 0.51 1.0675

-5718.75 1d3/2 0.06875 3.21143e-322

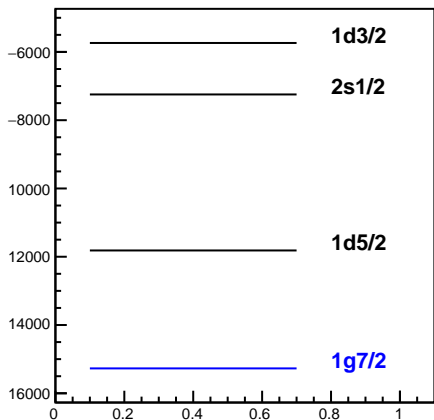
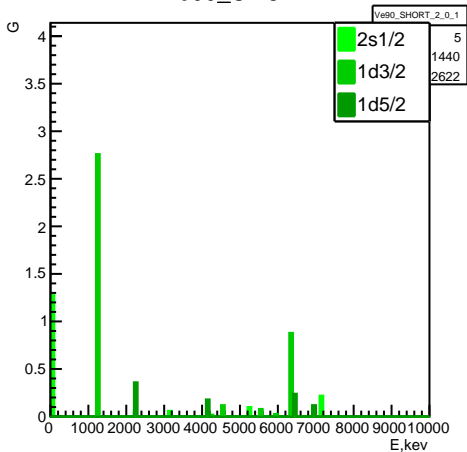
Pe87



Penalty function components



Ve90_SHORT



Experiment: Pe87 (7) Ve90_SHORT (15)

proton transfer

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

E_F: -10428 \pm 156.333 keV Δ : 3094.87 \pm 238.273 keV

penalty: 0.30967

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

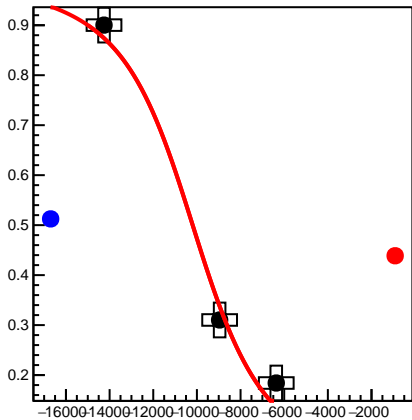
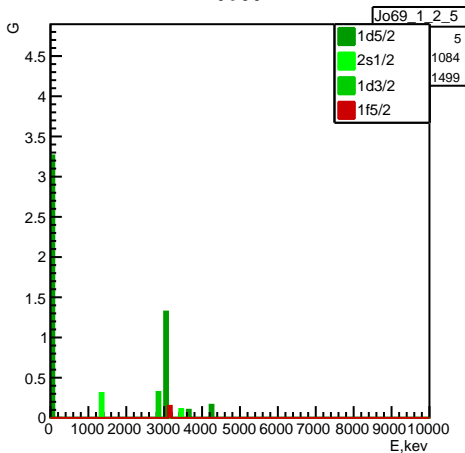
-11816.1 1d5/2 0.703333 0.706667

-7245.63 2s1/2 0.153 0.974

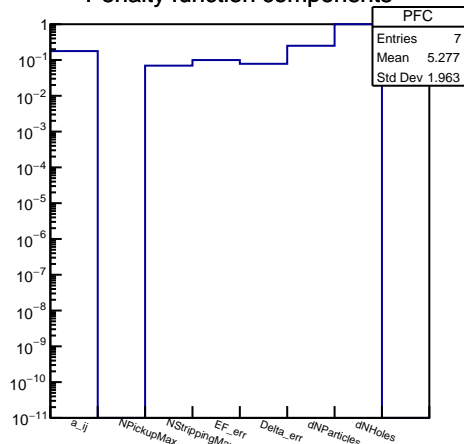
-15271.2 1g7/2 0.51 1.0745

-5737.55 1d3/2 0.06525 3.21143e-322

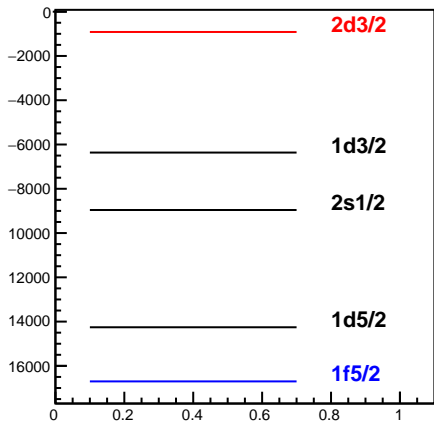
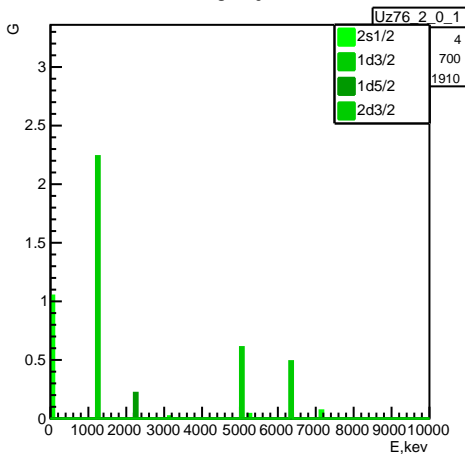
Jo69



Penalty function components



Uz76



Experiment: Jo69 (9) Uz76 (8)

proton transfer

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

 $E_F: -10194 \pm 498.857 \text{ keV}$ $\Delta: 3600.32 \pm 889.262 \text{ keV}$

penalty: 0.322121

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

-14256.3 1d5/2 0.90025 0.873833

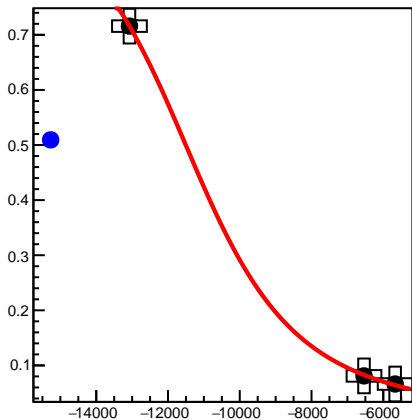
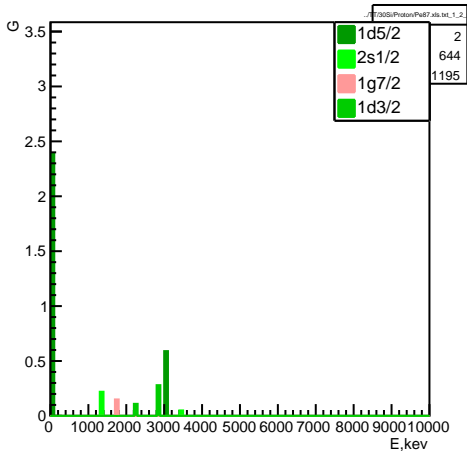
-8958.85 2s1/2 0.31025 0.8005

-6364.24 1d3/2 0.184125 0.79325

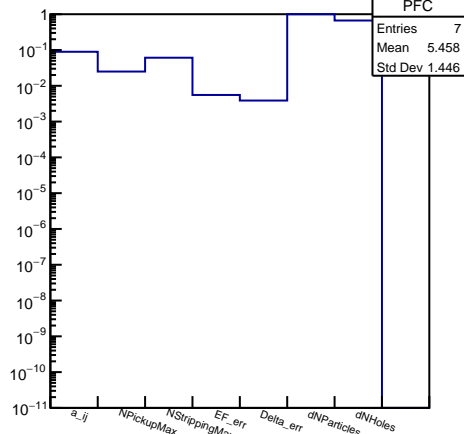
-16701.5 1f5/2 0.5125 3.21143e-322

-916.525 2d3/2 0.43875 0.177472

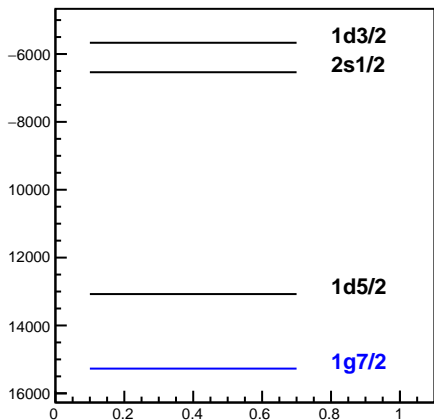
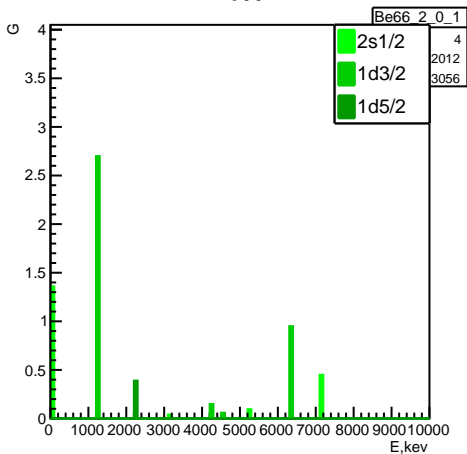
../TT/30Si/Proton/Pe87.xls.txt



Penalty function components



Be66



Experiment: ../TT/30Si/Proton/Pe87.xls.txt (7

proton transfer

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

E_F: -11505.1 \pm 27.7298 keV

Δ : 3279.99 \pm 43.9526 keV

penalty: 0.356005

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

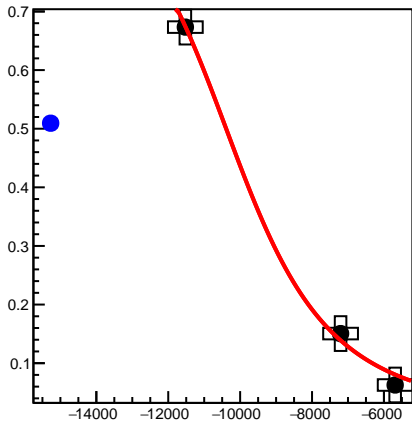
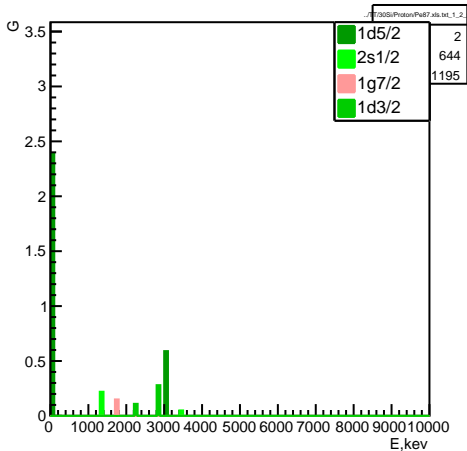
-13074.7 1d5/2 0.715833 0.561667

-6536.98 2s1/2 0.081 1.108

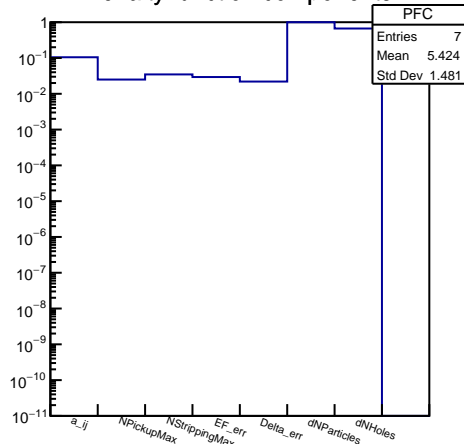
-15271.2 1g7/2 0.509375 1.0625

-5668.56 1d3/2 0.06625 3.21143e-322

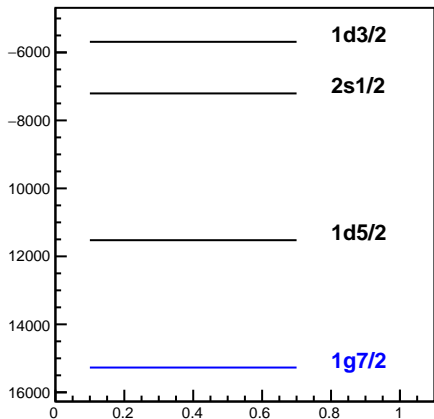
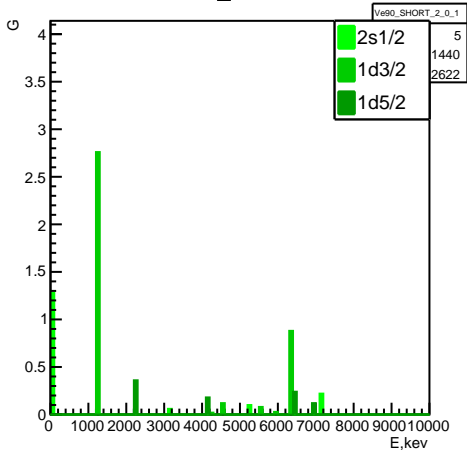
../TT/30Si/Proton/Pe87.xls.txt



Penalty function components



Ve90_SHORT



Experiment: ../TT/30Si/Proton/Pe87.xls.txt (7

proton transfer

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

E_F: -10389 \pm 147.073 keV

Δ : -3049.13 \pm 249.498 keV

penalty: 0.362068

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

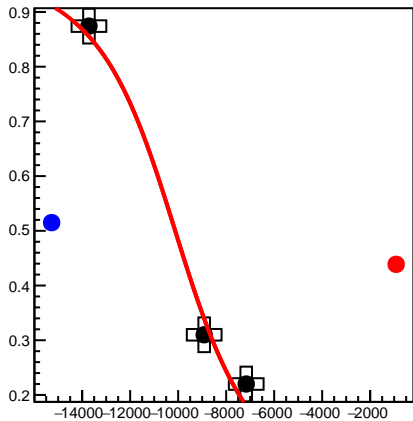
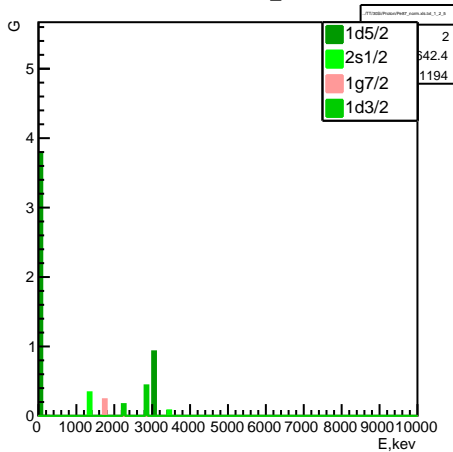
-11524.1 1d5/2 0.673333 0.646667

-7206.05 2s1/2 0.1505 0.969

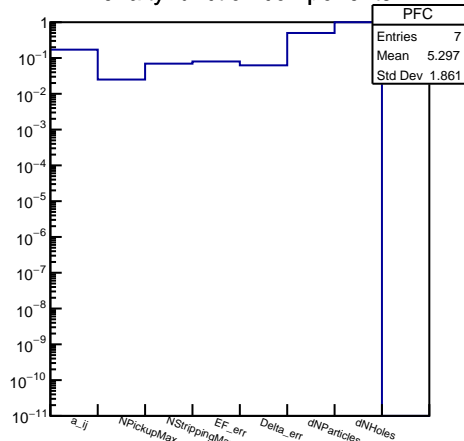
-15271.2 1g7/2 0.509375 1.0695

-5687.78 1d3/2 0.06275 3.21143e-322

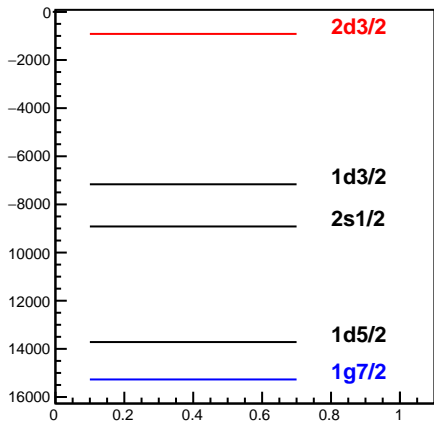
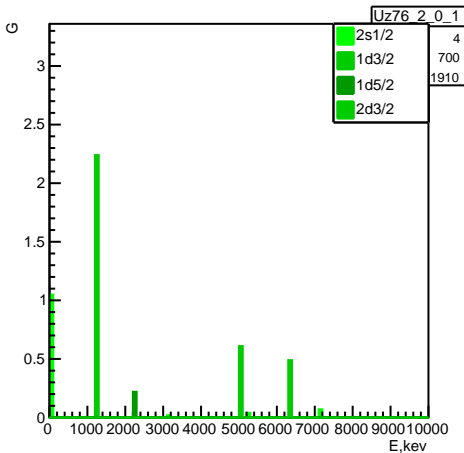
../TT/30Si/Proton/Pe87_norm.xls.txt



Penalty function components



Uz76



Experiment: ../TT/30Si/Proton/Pe87_norm.xls

proton transfer

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

E_F: -10123.3 \pm 400.17 keV

Δ : 3556.26 \pm 708.525 keV

penalty: 0.36693

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

-13717.3 1d5/2 0.874167 0.821667

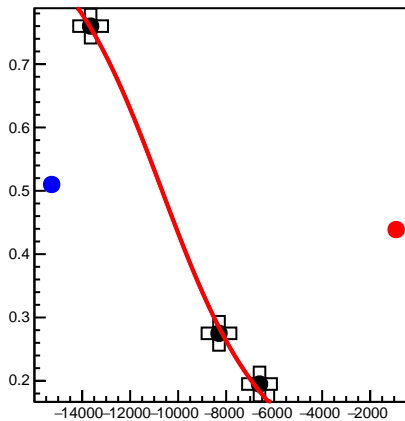
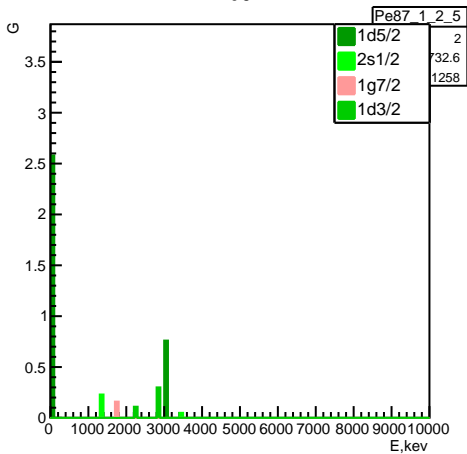
-8915.7 2s1/2 0.31 0.8

-15271.2 1g7/2 0.515 0.865

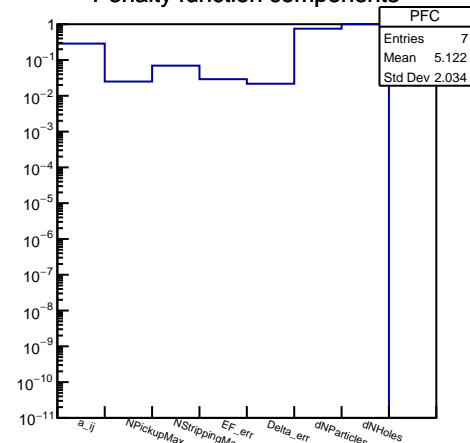
-7163.72 1d3/2 0.22 4.11557e-321

-916.525 2d3/2 0.43875 0.883436

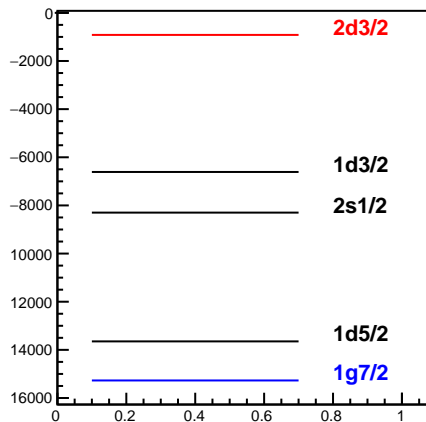
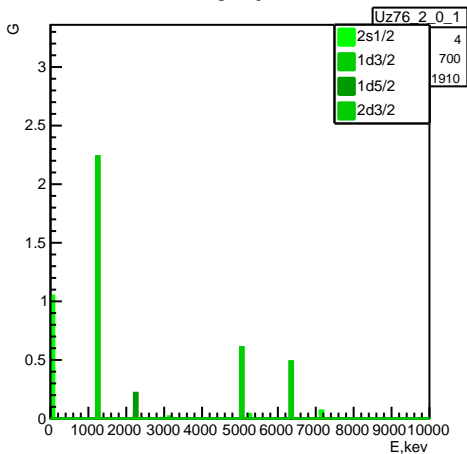
Pe87



Penalty function components



Uz76



Experiment: Pe87 (7) Uz76 (8)

proton transfer

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

E_F: -10668.6 \pm 145.764 keV Δ : -4963.62 \pm 246.435 keV

penalty: 0.419734

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

-13648.2 1d5/2 0.76 0.593333

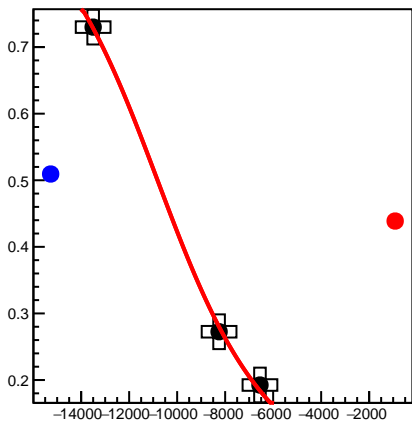
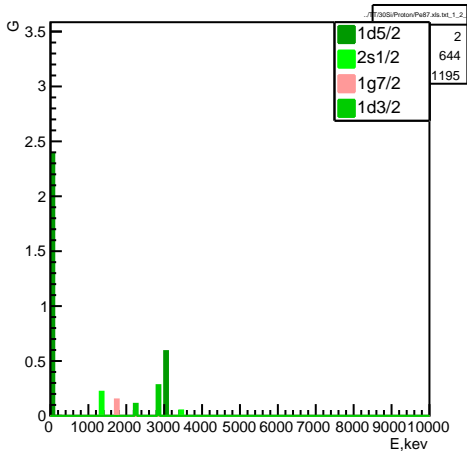
-8298.61 2s1/2 0.275 0.73

-15271.2 1g7/2 0.51 0.815

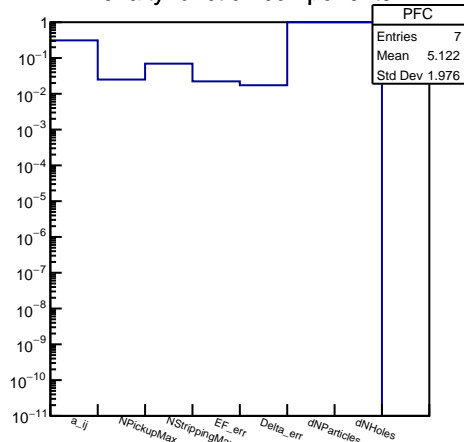
-6609.95 1d3/2 0.195 3.21143e-322

-916.525 2d3/2 0.43875 0.287222

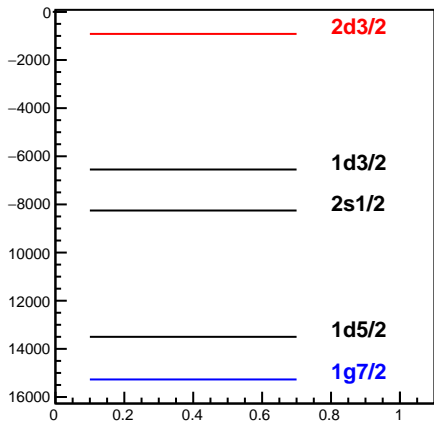
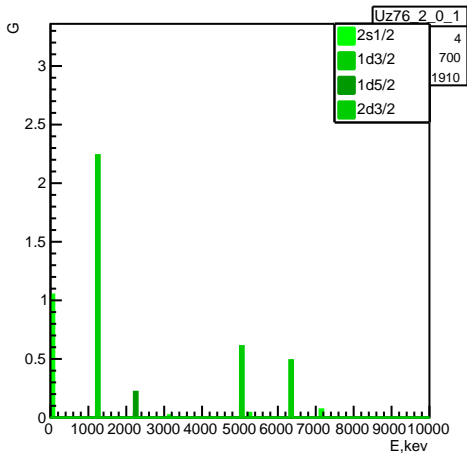
../TT/30Si/Proton/Pe87.xls.txt



Penalty function components



Uz76



Experiment: ../TT/30Si/Proton/Pe87.xls.txt (7

proton transfer

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

E_F: -10818 \pm 111.297 keV

Δ : 5230.95 \pm 196.879 keV

penalty: 0.470134

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

-13500.3 1d5/2 0.73 0.533333

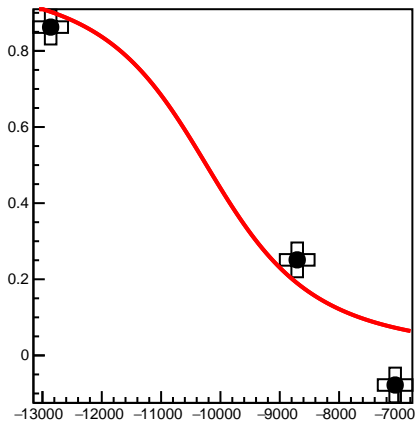
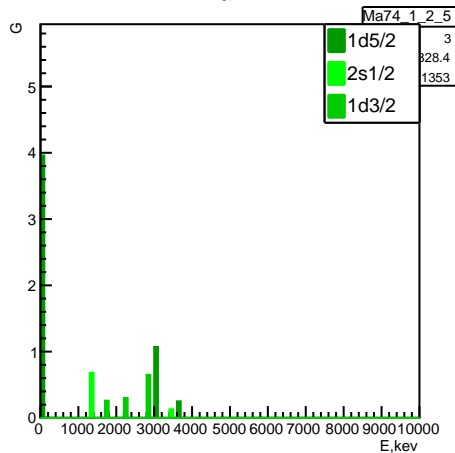
-8252.98 2s1/2 0.2725 0.725

-15271.2 1g7/2 0.509375 0.81

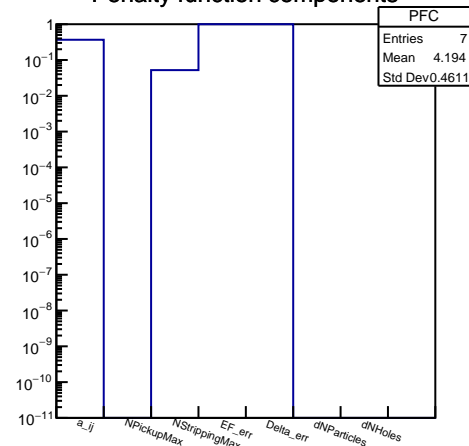
-6549.63 1d3/2 0.1925 3.21143e-322

-916.525 2d3/2 0.43875 0.310556

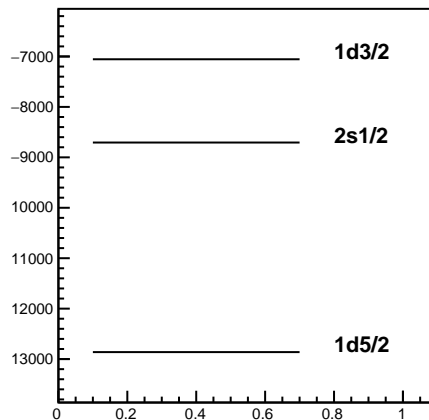
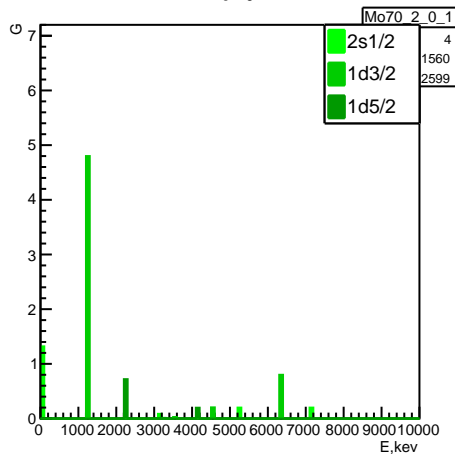
Ma74



Penalty function components



Mo70



Experiment: Ma74 (8) Mo70 (11)

proton transfer

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

E_F: -10235.7 \pm 2012.07 keV Δ : 1932.69 \pm 1713.53 keV

penalty: 3146.37

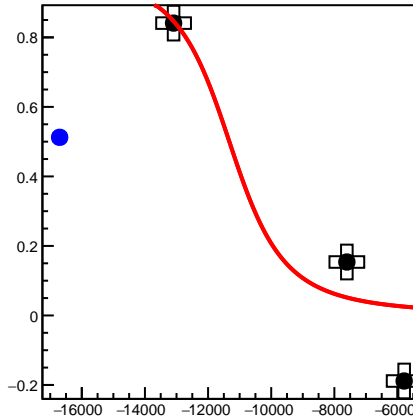
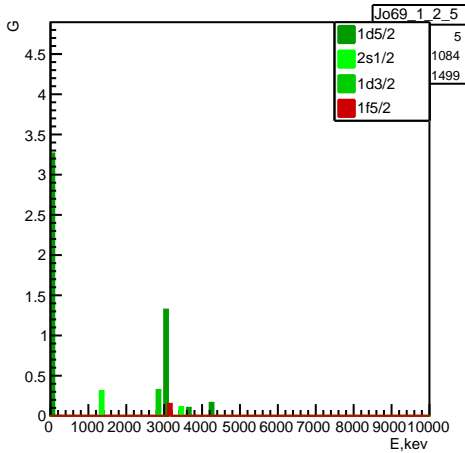
SPE,keV nlj OCC $\frac{G^+ + G^-}{2J+1}$

-12861.9 1d5/2 0.8625 1.035

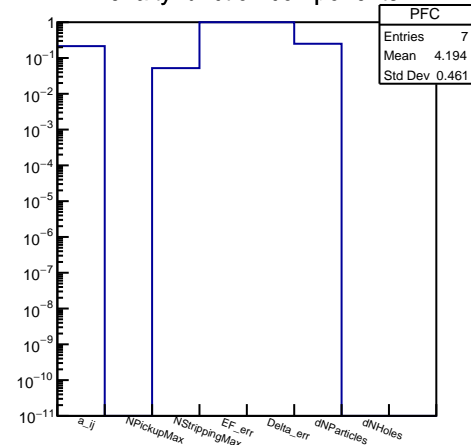
-8706.29 2s1/2 0.251 1.308

-7055.16 1d3/2 -0.07775 1.7605

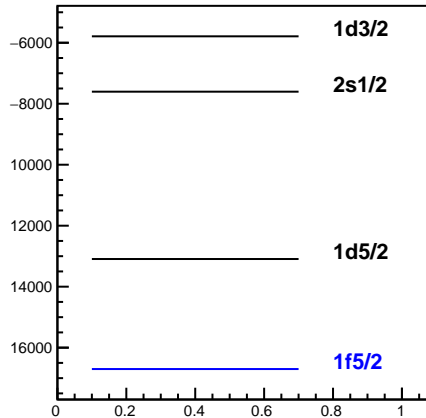
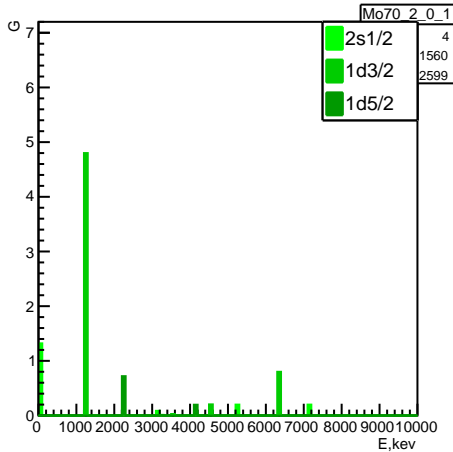
Jo69



Penalty function components



Mo70



Experiment: Jo69 (9) Mo70 (11)

proton transfer

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

E_F: -11326.3 \pm 3578.51 keV Δ : 1836.31 \pm 3037.05 keV

penalty: 3146.39

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

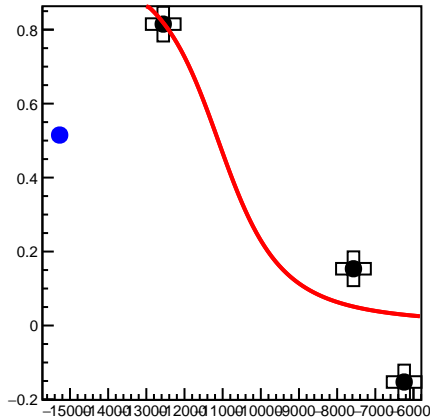
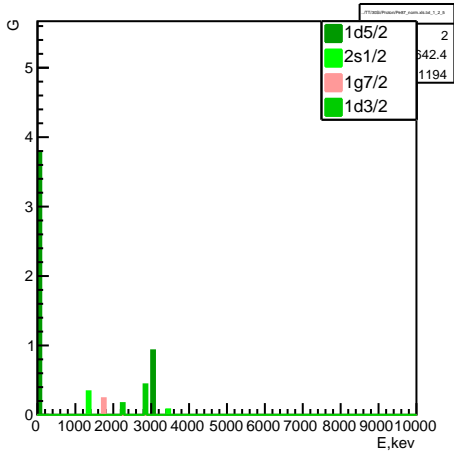
-13092.7 1d5/2 0.841083 0.992167

-7604.43 2s1/2 0.15375 1.1135

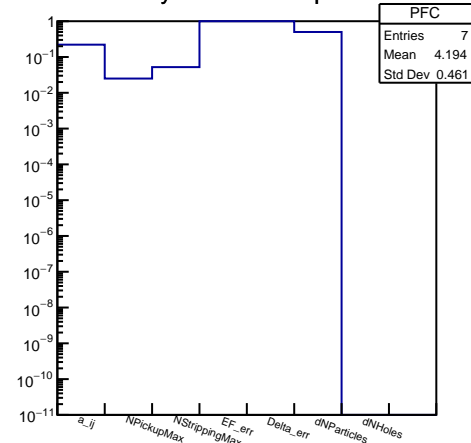
-5789.19 1d3/2 -0.188625 1.53875

-16701.5 1f5/2 0.5125 3.21143e-322

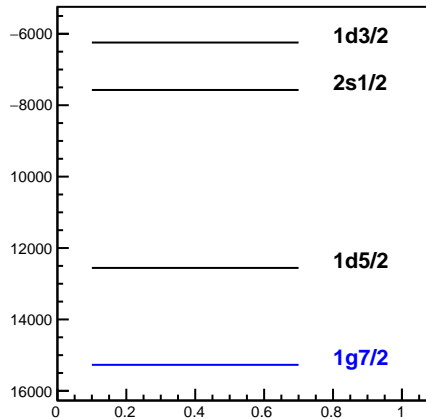
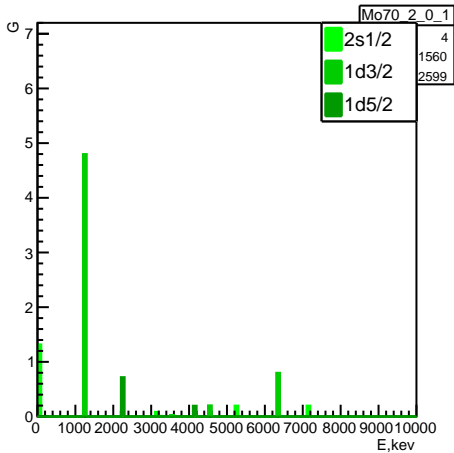
../TT/30Si/Proton/Pe87_norm.xls.txt



Penalty function components



Mo70



Experiment: ../TT/30Si/Proton/Pe87_norm.xls

proton transfer

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

E_F: -11116.1 \pm 2515.19 keV

Δ : -1739.91 \pm 2557.4 keV

penalty: 3146.44

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

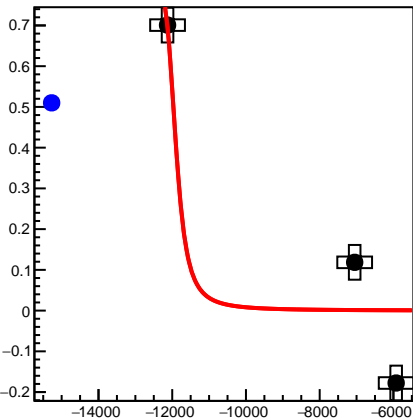
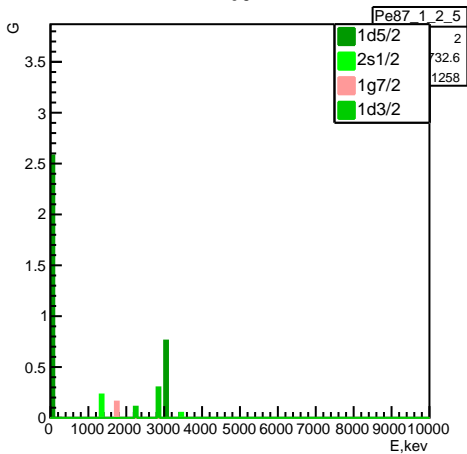
-12556.9 1d5/2 0.815 0.94

-7572.81 2s1/2 0.1535 1.113

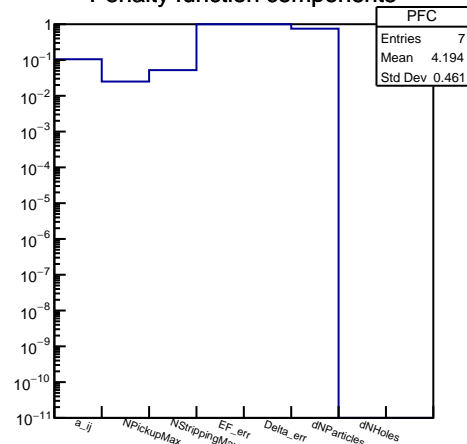
-15271.2 1g7/2 0.515 1.6105

-6244.21 1d3/2 -0.15275 3.21143e-322

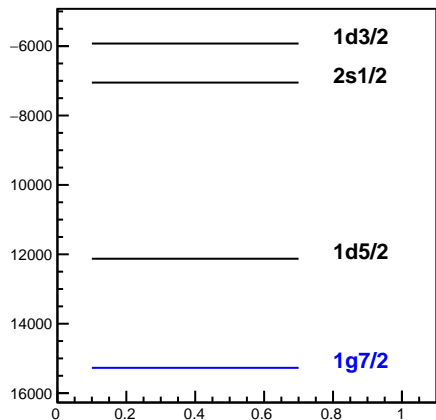
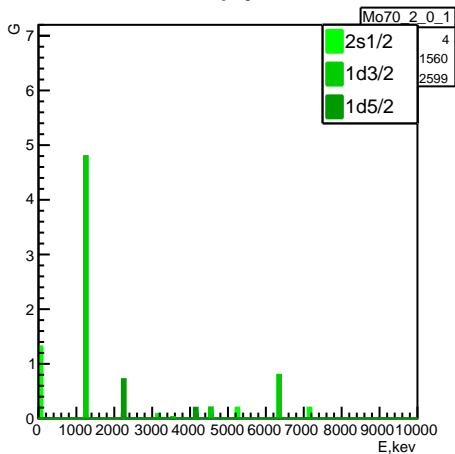
Pe87



Penalty function components



Mo70



Experiment: Pe87 (7) Mo70 (11)

proton transfer

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

E_F: -11968.8 \pm 5004.1 keV Δ : 359.95 \pm 11356.6 keV

penalty: 3146.47

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

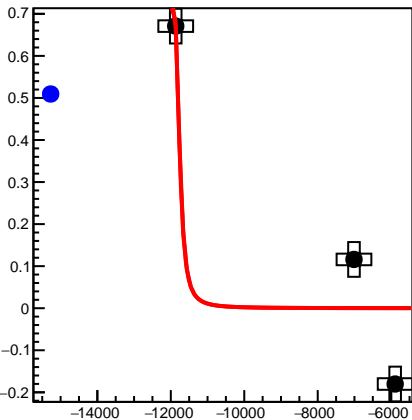
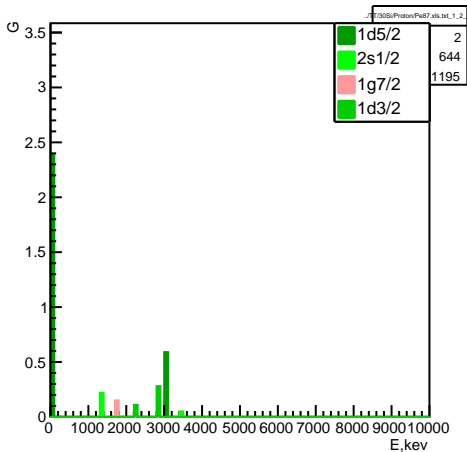
-12127 1d5/2 0.70833 0.711667

-7050.78 2s1/2 0.1185 1.043

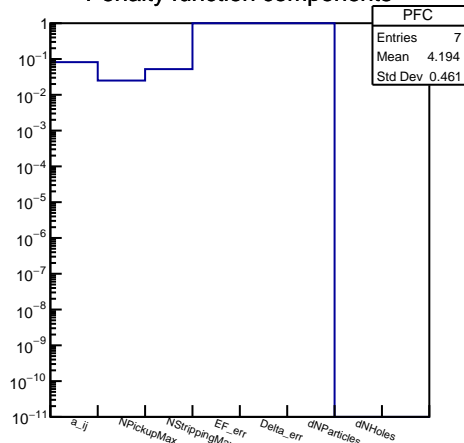
-15271.2 1g7/2 0.51 1.5605

-5925.53 1d3/2 -0.17775 3.21143e-322

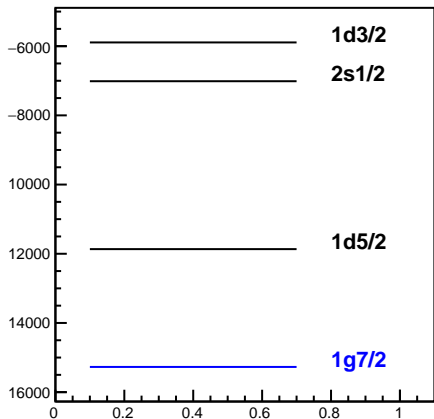
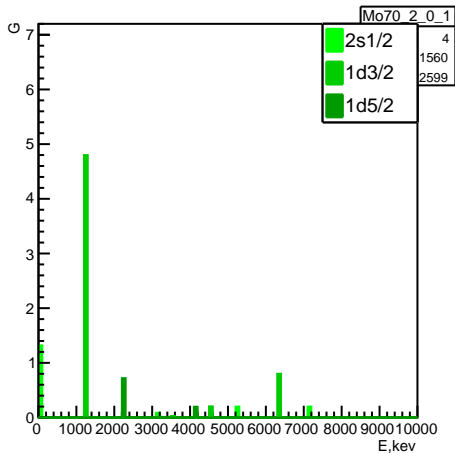
../TT/30Si/Proton/Pe87.xls.txt



Penalty function components



Mo70



Experiment: ../TT/30Si/Proton/Pe87.xls.txt (7

proton transfer

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

E_F: -11804 \pm 1392.88 keV

Δ : -170.687 \pm 3847.29 keV

penalty: 3146.51

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

-11865.9 1d5/2 0.670833 0.651667

-7012.9 2s1/2 0.116 1.038

-15271.2 1g7/2 0.509375 1.5555

-5891.92 1d3/2 -0.18025 4.00193e-322