```
(*Nuclear Species Experimental Data*)
isotopeName = "Pu-240";
databaseName = "JENDL-5";

atomicNumber = 94;(*Atomic number*)
neutronNumber = 147;(*Compound nucleus neutron number*)
(*Calculation Data Range*)

energyPattern = 3;(*Input required*)(*energyPattern=1;
Data at 0.0253eV*)(*energyPattern=2;
Data at 0.0253eV,500keV*)(*energyPattern=3;
Data at 0.0253eV,500keV,14MeV*)(*energyPattern=4;
Data at 500keV*)

(*Average Number of Prompt Neutrons*)
promptNeutrons1 = 2.86;(*0.0253 eV*)
promptNeutrons2 = 3.236;(*500 keV*)
promptNeutrons3 = 4.893;(*14 MeV*)

(*Neutron Separation Energy*)
neutronSeparationEnergy = 5241.5 / 1000;

(*Charge Distribution Experimental Data JENDL-5*)
yieldData0253eV = {{23, 2.6132200 * 10^(-18)}, {24, 4.1857714 * 10^(-14)},
    {25, 1.6543503 * 10^(-11)}, {26, 1.1559905 * 10^(-09)},
    {27, 1.8970924 * 10^(-08)}, {28, 3.2690005 * 10^(-07)}, {29, 3.1604322 * 10^(-06)},
    {30, 3.8567061 * 10^(-05)}, {31, 2.4983899 * 10^(-04)}, {32, 1.4996459 * 10^(-03)},
    {33, 4.6717159 * 10^(-03)}, {34, 1.3908622 * 10^(-02)}, {35, 2.1441010 * 10^(-02)},
    {36, 4.7287310 * 10^(-02)}, {37, 6.3253316 * 10^(-02)}, {38, 1.1609629 * 10^(-01)},
    {39, 1.2215956 * 10^(-01)}, {40, 1.7451881 * 10^(-01)}, {41, 1.3965402 * 10^(-01)},
    {42, 1.5669002 * 10^(-01)}, {43, 8.1989896 * 10^(-02)}, {44, 5.1190025 * 10^(-02)},
    {45, 3.4755042 * 10^(-03)}, {46, 1.1368033 * 10^(-03)}, {47, 7.5310615 * 10^(-04)},
    {48, 7.9216666 * 10^(-04)}, {49, 3.3749134 * 10^(-03)}, {50, 4.8328457 * 10^(-02)},
    {51, 8.060210^(-02)}, {52, 1.6466126 * 10^(-01)}, {53, 1.4398792 * 10^(-01)},
    {54, 1.6835672 * 10^(-01)}, {55, 1.2359917 * 10^(-01)}, {56, 1.1697970 * 10^(-01)},
    {57, 6.2925422 * 10^(-02)}, {58, 4.6145192 * 10^(-02)}, {59, 2.1188518 * 10^(-02)},
    {60, 1.2645155 * 10^(-02)}, {61, 4.2719392 * 10^(-03)}, {62, 1.7305881 * 10^(-03)},
    {63, 3.5352356 * 10^(-04)}, {64, 3.6674212 * 10^(-05)}, {65, 2.7336900 * 10^(-06)},
    {66, 2.7919051 * 10^(-07)}, {67, 1.9553814 * 10^(-08)}, {68, 6.5499338 * 10^(-10)},
    {69, 5.9028674 * 10^(-12)}, {70, 8.8733584 * 10^(-15)}, {71, 0}};

yieldData500keV = {{23, 1.566810^(-17)}, {24, 2.2763960 * 10^(-13)},
    {25, 9.1569549 * 10^(-11)}, {26, 5.0803667 * 10^(-09)},
    {27, 5.7331879 * 10^(-08)}, {28, 5.7520415 * 10^(-07)}, {29, 6.8263912 * 10^(-06)},
    {30, 7.1481595 * 10^(-05)}, {31, 4.2570010 * 10^(-04)}, {32, 2.0811067 * 10^(-03)},
    {33, 4.9235076 * 10^(-03)}, {34, 1.2468259 * 10^(-02)}, {35, 2.0896146 * 10^(-02)},
    {36, 4.5378300 * 10^(-02)}, {37, 6.0305418 * 10^(-02)}, {38, 1.1496600 * 10^(-01)},
    {39, 1.2230502 * 10^(-01)}, {40, 1.7589580 * 10^(-01)}, {41, 1.5185694 * 10^(-01)},
    {42, 1.6150016 * 10^(-01)}, {43, 7.8200393 * 10^(-02)}, {44, 4.2552357 * 10^(-02)},
    {45, 3.6932628 * 10^(-03)}, {46, 1.4227981 * 10^(-03)}, {47, 1.1943598 * 10^(-03)},
    {48, 1.5982194 * 10^(-03)}, {49, 4.7903763 * 10^(-03)}, {50, 4.7921998 * 10^(-02)},
    {51, 8.2123399 * 10^(-02)}, {52, 1.6166979 * 10^(-01)}, {53, 1.4855200 * 10^(-01)},
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    {54, 1.6255441 * 10^(-01)}, {55, 1.2169414 * 10^(-01)}, {56, 1.1608306 * 10^(-01)},
    {57, 6.4938685 * 10^(-02)}, {58, 4.5864162 * 10^(-02)}, {59, 2.1964968 * 10^(-02)},
    {60, 1.2921246 * 10^(-02)}, {61, 4.7134147 * 10^(-03)}, {62, 1.9549016 * 10^(-03)},
    {63, 4.1218847 * 10^(-04)}, {64, 8.4094998 * 10^(-05)}, {65, 1.1604264 * 10^(-05)},
    {66, 2.4796601 * 10^(-06)}, {67, 4.0459452 * 10^(-07)}, {68, 3.2026887 * 10^(-08)},
    {69, 5.2240244 * 10^(-10)}, {70, 9.4774777 * 10^(-13)}, {71, 0}};

yieldData14MeV = {{23, 4.1565400 * 10^(-14)}, {24, 9.6591549 * 10^(-11)},
    {25, 1.7401295 * 10^(-08)}, {26, 5.1706825 * 10^(-07)}, {27, 4.5009844 * 10^(-06)},
    {28, 3.2129836 * 10^(-05)}, {29, 1.8545857 * 10^(-04)}, {30, 7.9024789 * 10^(-04)},
    {31, 2.3399705 * 10^(-03)}, {32, 5.1863111 * 10^(-03)}, {33, 1.0298347 * 10^(-02)},
    {34, 1.8332679 * 10^(-02)}, {35, 3.0267427 * 10^(-02)}, {36, 4.5184123 * 10^(-02)},
    {37, 6.4691292 * 10^(-02)}, {38, 8.5761555 * 10^(-02)}, {39, 1.0785615 * 10^(-01)},
    {40, 1.2581010 * 10^(-01)}, {41, 1.3068764 * 10^(-01)}, {42, 1.1937163 * 10^(-01)},
    {43, 9.4427302 * 10^(-02)}, {44, 6.8790651 * 10^(-02)}, {45, 4.3166629 * 10^(-02)},
    {46, 3.1205501 * 10^(-02)}, {47, 2.9778279 * 10^(-02)}, {48, 3.2946413 * 10^(-02)},
    {49, 4.5162536 * 10^(-02)}, {50, 6.8059041 * 10^(-02)}, {51, 9.7143249 * 10^(-02)},
    {52, 1.1558329 * 10^(-01)}, {53, 1.3118732 * 10^(-01)}, {54, 1.2317066 * 10^(-01)},
    {55, 1.1315718 * 10^(-01)}, {56, 8.5198327 * 10^(-02)}, {57, 6.3710089 * 10^(-02)},
    {58, 4.4495936 * 10^(-02)}, {59, 2.9312239 * 10^(-02)}, {60, 1.8329093 * 10^(-02)},
    {61, 1.0242668 * 10^(-02)}, {62, 4.9402861 * 10^(-03)}, {63, 2.0529506 * 10^(-03)},
    {64, 7.6069623 * 10^(-04)}, {65, 2.5770102 * 10^(-04)}, {66, 8.7801993 * 10^(-05)},
    {67, 2.6360656 * 10^(-05)}, {68, 6.9694017 * 10^(-06)}, {69, 7.1340790 * 10^(-07)},
    {70, 1.3885853 * 10^(-08)}, {71, 3.2156600 * 10^(-11)}};

optResult0253eVRe1 =
  {0.01751556040066103, {effectiveDistance0253eV[23, 71] -> 0.20136379481200828`,
    effectiveDistance0253eV[24, 70] -> 0.566686229331,
    effectiveDistance0253eV[25, 69] -> 0.7609464596436609,
    effectiveDistance0253eV[26, 68] -> 0.8192725880479201,
    effectiveDistance0253eV[27, 67] -> 0.8765976416847995,
    effectiveDistance0253eV[28, 66] -> 0.9498633781862548,
    effectiveDistance0253eV[29, 65] -> 0.9776079248006706,
    effectiveDistance0253eV[30, 64] -> 1.0024085433126368`,
    effectiveDistance0253eV[31, 63] -> 1.0272343430035835`,
    effectiveDistance0253eV[32, 62] -> 1.0490510855970507`,
    effectiveDistance0253eV[33, 61] -> 1.071086588204518,
    effectiveDistance0253eV[34, 60] -> 1.090298494986529,
    effectiveDistance0253eV[35, 59] -> 1.1100504377150193`,
    effectiveDistance0253eV[36, 58] -> 1.1263000756571702`,
    effectiveDistance0253eV[37, 57] -> 1.142730875884657,
    effectiveDistance0253eV[38, 56] -> 1.1554487476436215`,
    effectiveDistance0253eV[39, 55] -> 1.168512199592626,
    effectiveDistance0253eV[40, 54] -> 1.177676936124692,
    effectiveDistance0253eV[41, 53] -> 1.1874344453650238`,
    effectiveDistance0253eV[42, 52] -> 1.1943879036228868`,
    effectiveDistance0253eV[43, 51] -> 1.20177832772359,
    effectiveDistance0253eV[44, 50] -> 1.2059349006390405`,
    effectiveDistance0253eV[45, 49] -> 1.210847526074064,
    effectiveDistance0253eV[46, 48] -> 1.2122374672914957`,
    effectiveDistance0253eV[47, 47] -> 1.2143594776871767`,
    effectiveDistance0253eV[48, 46] -> 1.2120981518107652`,
    effectiveDistance0253eV[49, 45] -> 1.210836192471577,
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    effectiveDistance0253eV[50, 44] -> 1.2059125301865996`,
    effectiveDistance0253eV[51, 43] -> 1.2011312690097953`,
    effectiveDistance0253eV[52, 42] -> 1.194407661945989,
    effectiveDistance0253eV[53, 41] -> 1.1874464964611173`,
    effectiveDistance0253eV[54, 40] -> 1.1776627416631311`,
    effectiveDistance0253eV[55, 39] -> 1.168516735873021,
    effectiveDistance0253eV[56, 38] -> 1.1554516466057985`,
    effectiveDistance0253eV[57, 37] -> 1.1427289351426004`,
    effectiveDistance0253eV[58, 36] -> 1.1262911130991473`,
    effectiveDistance0253eV[59, 35] -> 1.110046178328671,
    effectiveDistance0253eV[60, 34] -> 1.0902649239079232`,
    effectiveDistance0253eV[61, 33] -> 1.0710556128491324`,
    effectiveDistance0253eV[62, 32] -> 1.049099674548159,
    effectiveDistance0253eV[63, 31] -> 1.0273499213059758`,
    effectiveDistance0253eV[64, 30] -> 1.0023921778814406`,
    effectiveDistance0253eV[65, 29] -> 0.9775618046877746,
    effectiveDistance0253eV[66, 28] -> 0.9498145966705135,
    effectiveDistance0253eV[67, 27] -> 0.8765976416823081,
    effectiveDistance0253eV[68, 26] -> 0.8192725880442302,
    effectiveDistance0253eV[69, 25] -> 0.76094645964308,
    effectiveDistance0253eV[70, 24] -> 0.5666862293285023,
    effectiveDistance0253eV[71, 23] -> 0.20136379480626065`}};

optResult500keVRe1 =
  {8.434483769843325*^-13, {effectiveDistance500keV[23, 71] -> 0.27427068134760196`,
    effectiveDistance500keV[24, 70] -> 0.6053743262232452,
    effectiveDistance500keV[25, 69] -> 0.7775280586083623,
    effectiveDistance500keV[26, 68] -> 0.8262873476524215,
    effectiveDistance500keV[27, 67] -> 0.8751929476881848,
    effectiveDistance500keV[28, 66] -> 0.9346225382597768,
    effectiveDistance500keV[29, 65] -> 0.9632585740126206,
    effectiveDistance500keV[30, 64] -> 0.9889024268643506,
    effectiveDistance500keV[31, 63] -> 1.014529886481701,
    effectiveDistance500keV[32, 62] -> 1.037144741929577,
    effectiveDistance500keV[33, 61] -> 1.0598715097108409`,
    effectiveDistance500keV[34, 60] -> 1.0798083620985774`,
    effectiveDistance500keV[35, 59] -> 1.1002750301093764`,
    effectiveDistance500keV[36, 58] -> 1.1172308524534387`,
    effectiveDistance500keV[37, 57] -> 1.1342889329202523`,
    effectiveDistance500keV[38, 56] -> 1.147638759808503,
    effectiveDistance500keV[39, 55] -> 1.1612344926671996`,
    effectiveDistance500keV[40, 54] -> 1.1709394485193616`,
    effectiveDistance500keV[41, 53] -> 1.1811549031461235`,
    effectiveDistance500keV[42, 52] -> 1.1884574134784482`,
    effectiveDistance500keV[43, 51] -> 1.1960769529766047`,
    effectiveDistance500keV[44, 50] -> 1.2003972171645332`,
    effectiveDistance500keV[45, 49] -> 1.2054720514574357`,
    effectiveDistance500keV[46, 48] -> 1.2070047094427896`,
    effectiveDistance500keV[47, 47] -> 1.209223188822132,
    effectiveDistance500keV[48, 46] -> 1.2070534023406863`,
    effectiveDistance500keV[49, 45] -> 1.2055809343457071`,
    effectiveDistance500keV[50, 44] -> 1.2004467137455033`,
    effectiveDistance500keV[51, 43] -> 1.1960972899492321`,
    effectiveDistance500keV[52, 42] -> 1.188457846760981,
    effectiveDistance500keV[53, 41] -> 1.1811458645697037`,
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    effectiveDistance500keV[54, 40] -> 1.170907317928015,
    effectiveDistance500keV[55, 39] -> 1.16123246555589,
    effectiveDistance500keV[56, 38] -> 1.147642629185789,
    effectiveDistance500keV[57, 37] -> 1.1343182609533902`,
    effectiveDistance500keV[58, 36] -> 1.11723500794741,
    effectiveDistance500keV[59, 35] -> 1.1002942244351712`,
    effectiveDistance500keV[60, 34] -> 1.0798218313048458`,
    effectiveDistance500keV[61, 33] -> 1.0598553331257219`,
    effectiveDistance500keV[62, 32] -> 1.037122031044608,
    effectiveDistance500keV[63, 31] -> 1.0145184144218422`,
    effectiveDistance500keV[64, 30] -> 0.988958768954031,
    effectiveDistance500keV[65, 29] -> 0.9634380178193896,
    effectiveDistance500keV[66, 28] -> 0.93510196080906,
    effectiveDistance500keV[67, 27] -> 0.8751929476875033,
    effectiveDistance500keV[68, 26] -> 0.826287347650049,
    effectiveDistance500keV[69, 25] -> 0.7775280586090374,
    effectiveDistance500keV[70, 24] -> 0.6053743262222714,
    effectiveDistance500keV[71, 23] -> 0.27427068134529}};

optResult14MeVRe1 =
  {0.004381575664328017, {effectiveDistance14MeV[23, 71] -> 0.029340752995660725`,
    effectiveDistance14MeV[24, 70] -> 0.35643845427935034`,
    effectiveDistance14MeV[25, 69] -> 0.6988589801574748,
    effectiveDistance14MeV[26, 68] -> 0.8578299418497511,
    effectiveDistance14MeV[27, 67] -> 0.9446805889155626,
    effectiveDistance14MeV[28, 66] -> 0.9645500505492924,
    effectiveDistance14MeV[29, 65] -> 0.9942526271417642,
    effectiveDistance14MeV[30, 64] -> 1.0207008475179689`,
    effectiveDistance14MeV[31, 63] -> 1.0468917384423704`,
    effectiveDistance14MeV[32, 62] -> 1.069746459281388,
    effectiveDistance14MeV[33, 61] -> 1.0928651197937493`,
    effectiveDistance14MeV[34, 60] -> 1.1127563386684367`,
    effectiveDistance14MeV[35, 59] -> 1.1331169191614912`,
    effectiveDistance14MeV[36, 58] -> 1.149696169993394,
    effectiveDistance14MeV[37, 57] -> 1.166783062408248,
    effectiveDistance14MeV[38, 56] -> 1.1799251416829828`,
    effectiveDistance14MeV[39, 55] -> 1.1937535957044279`,
    effectiveDistance14MeV[40, 54] -> 1.2037748091467613`,
    effectiveDistance14MeV[41, 53] -> 1.214474119591625,
    effectiveDistance14MeV[42, 52] -> 1.2214943624904808`,
    effectiveDistance14MeV[43, 51] -> 1.2289892148242483`,
    effectiveDistance14MeV[44, 50] -> 1.2328020684055283`,
    effectiveDistance14MeV[45, 49] -> 1.238079544758106,
    effectiveDistance14MeV[46, 48] -> 1.239429471650262,
    effectiveDistance14MeV[47, 47] -> 1.2415799882619791`,
    effectiveDistance14MeV[48, 46] -> 1.2395093681405054`,
    effectiveDistance14MeV[49, 45] -> 1.2381459173751543`,
    effectiveDistance14MeV[50, 44] -> 1.2327865141835312`,
    effectiveDistance14MeV[51, 43] -> 1.2290302187646351`,
    effectiveDistance14MeV[52, 42] -> 1.2214481815150107`,
    effectiveDistance14MeV[53, 41] -> 1.2144795507058486`,
    effectiveDistance14MeV[54, 40] -> 1.2037448648714812`,
    effectiveDistance14MeV[55, 39] -> 1.1938210939587912`,
    effectiveDistance14MeV[56, 38] -> 1.1799159391762366`,
    effectiveDistance14MeV[57, 37] -> 1.1667618304798706`,
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    effectiveDistance14MeV[58, 36] -> 1.1496750857670066`,
    effectiveDistance14MeV[59, 35] -> 1.1330732983025547`,
    effectiveDistance14MeV[60, 34] -> 1.1127560767670632`,
    effectiveDistance14MeV[61, 33] -> 1.0928579675322398`,
    effectiveDistance14MeV[62, 32] -> 1.06968361907548,
    effectiveDistance14MeV[63, 31] -> 1.0467257426769294`,
    effectiveDistance14MeV[64, 30] -> 1.020653683376671,
    effectiveDistance14MeV[65, 29] -> 0.9946499233895107,
    effectiveDistance14MeV[66, 28] -> 0.9657281675568096,
    effectiveDistance14MeV[67, 27] -> 0.9446805889154591,
    effectiveDistance14MeV[68, 26] -> 0.8578299418492149,
    effectiveDistance14MeV[69, 25] -> 0.6988589801568649,
    effectiveDistance14MeV[70, 24] -> 0.35643845427651677`,
    effectiveDistance14MeV[71, 23] -> 0.029340752991777054`}};

optResult0253eVRe2 = {0.017515557692080568`,
   {fermiEnergy0253eV[23, 71] -> 1., fermiEnergy0253eV[24, 70] ->
     1.0000000000000049`, fermiEnergy0253eV[25, 69] -> 1.0000000000003304`,
    fermiEnergy0253eV[26, 68] -> 1.0000000009398913`, fermiEnergy0253eV[27, 67] ->
     1.0000000072365827`, fermiEnergy0253eV[28, 66] -> -1.0010135288143651`,
    fermiEnergy0253eV[29, 65] -> 1.2415850844533736`,
    fermiEnergy0253eV[30, 64] -> -0.7505057905667964,
    fermiEnergy0253eV[31, 63] -> 1.3338951681357722`,
    fermiEnergy0253eV[32, 62] -> -0.721568500505707,
    fermiEnergy0253eV[33, 61] -> 1.567945142152466,
    fermiEnergy0253eV[34, 60] -> 0.3769916347455516,
    fermiEnergy0253eV[35, 59] -> 4.066809693675229,
    fermiEnergy0253eV[36, 58] -> 2.7718598585692797`,
    fermiEnergy0253eV[37, 57] -> 5.342970796965532,
    fermiEnergy0253eV[38, 56] -> 2.6700743277171615`,
    fermiEnergy0253eV[39, 55] -> 4.157262587192583,
    fermiEnergy0253eV[40, 54] -> 0.14950193374297047`,
    fermiEnergy0253eV[41, 53] -> 0.7748154515096161,
    fermiEnergy0253eV[42, 52] -> -1.5749710734226612`,
    fermiEnergy0253eV[43, 51] -> 0.253795413967463,
    fermiEnergy0253eV[44, 50] -> -1.804820871126298,
    fermiEnergy0253eV[45, 49] -> 0.9524815328328248,
    fermiEnergy0253eV[46, 48] -> -0.7710950265308655,
    fermiEnergy0253eV[47, 47] -> 2.2393374959412204`,
    fermiEnergy0253eV[48, 46] -> -1.0697775645582979`,
    fermiEnergy0253eV[49, 45] -> 0.9335119112767426,
    fermiEnergy0253eV[50, 44] -> -1.8451588677437032`,
    fermiEnergy0253eV[51, 43] -> -1.1505178252601964`,
    fermiEnergy0253eV[52, 42] -> -1.5172513849051121`,
    fermiEnergy0253eV[53, 41] -> 0.8186970582363065,
    fermiEnergy0253eV[54, 40] -> 0.13786366587165613`,
    fermiEnergy0253eV[55, 39] -> 4.190876201314771,
    fermiEnergy0253eV[56, 38] -> 2.7033533872050217`,
    fermiEnergy0253eV[57, 37] -> 5.368493029323206,
    fermiEnergy0253eV[58, 36] -> 2.784223082424791,
    fermiEnergy0253eV[59, 35] -> 4.093893636010176,
    fermiEnergy0253eV[60, 34] -> 0.3353636739578672,
    fermiEnergy0253eV[61, 33] -> 1.535231406777369,
    fermiEnergy0253eV[62, 32] -> -0.5453727449847451,
    fermiEnergy0253eV[63, 31] -> 1.6968019786121902`,
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     fermiEnergy0253eV[64, 30] -> -0.7354010041481746,
     fermiEnergy0253eV[65, 29] -> 1.176408659421081,
     fermiEnergy0253eV[66, 28] -> -1.0728671850352178`,
     fermiEnergy0253eV[67, 27] -> 1.0000000066431702`,
     fermiEnergy0253eV[68, 26] -> 1.0000000008566667`,
     fermiEnergy0253eV[69, 25] -> 1.0000000000002982`, fermiEnergy0253eV[70, 24] ->
      1.0000000000000049`, fermiEnergy0253eV[71, 23] -> 1.}};

optResult500keVRe2 = {8.370791291329712*^-13,
   {fermiEnergy500keV[23, 71] -> 1., fermiEnergy500keV[24, 70] -> 1.,
     fermiEnergy500keV[25, 69] -> 0.9999999999999994,
     fermiEnergy500keV[26, 68] -> 0.9999999999938466,
     fermiEnergy500keV[27, 67] -> 0.999999999822847, fermiEnergy500keV[28, 66] ->
      0.11669376401165414`, fermiEnergy500keV[29, 65] -> 1.922099523325871,
     fermiEnergy500keV[30, 64] -> -0.5740439434417021, fermiEnergy500keV[31, 63] ->
      1.189344905420389, fermiEnergy500keV[32, 62] -> -1.1284964523674006`,
     fermiEnergy500keV[33, 61] -> 0.8801397095295496,
     fermiEnergy500keV[34, 60] -> -0.4247804480085523,
     fermiEnergy500keV[35, 59] -> 3.359201659279669,
     fermiEnergy500keV[36, 58] -> 2.179067307871861,
     fermiEnergy500keV[37, 57] -> 4.867677041556869,
     fermiEnergy500keV[38, 56] -> 2.3731683648909114`,
     fermiEnergy500keV[39, 55] -> 3.9916383701934595`,
     fermiEnergy500keV[40, 54] -> 0.19164242266451184`,
     fermiEnergy500keV[41, 53] -> 1.0182027042350612`,
     fermiEnergy500keV[42, 52] -> -1.2807345351989943`,
     fermiEnergy500keV[43, 51] -> 0.5004316241551073,
     fermiEnergy500keV[44, 50] -> -1.6613040841906908`,
     fermiEnergy500keV[45, 49] -> 1.158682858190767,
     fermiEnergy500keV[46, 48] -> -0.4617020537514457,
     fermiEnergy500keV[47, 47] -> 2.7154887791642257`,
     fermiEnergy500keV[48, 46] -> -0.36737711772592385`,
     fermiEnergy500keV[49, 45] -> 1.3726350055160423`,
     fermiEnergy500keV[50, 44] -> -1.5885405267575508`,
     fermiEnergy500keV[51, 43] -> 0.4969803108746508,
     fermiEnergy500keV[52, 42] -> -1.3406417646076885`,
     fermiEnergy500keV[53, 41] -> 0.9242225469962896,
     fermiEnergy500keV[54, 40] -> 0.031829965283861686`,
     fermiEnergy500keV[55, 39] -> 3.8864048991071045`,
     fermiEnergy500keV[56, 38] -> 2.2673691386661083`,
     fermiEnergy500keV[57, 37] -> 4.807250666083744,
     fermiEnergy500keV[58, 36] -> 2.0438298628045093`,
     fermiEnergy500keV[59, 35] -> 3.244635556476857,
     fermiEnergy500keV[60, 34] -> -0.5700333828485599,
     fermiEnergy500keV[61, 33] -> 0.640560497465281,
     fermiEnergy500keV[62, 32] -> -1.406665706388696,
     fermiEnergy500keV[63, 31] -> 0.9185475375883627,
     fermiEnergy500keV[64, 30] -> -0.6776765163340157,
     fermiEnergy500keV[65, 29] -> 2.158390582970466,
     fermiEnergy500keV[66, 28] -> 1.2596932908639678`,
     fermiEnergy500keV[67, 27] -> 0.9999999997499387,
     fermiEnergy500keV[68, 26] -> 0.9999999999910472,
     fermiEnergy500keV[69, 25] -> 0.9999999999999991,
     fermiEnergy500keV[70, 24] -> 1., fermiEnergy500keV[71, 23] -> 1.}};
```

```
optResult14MeVRe2 =
  {8.722795562738122*^-11, {fermiEnergy14MeV[23, 71] -> 0.9999999995548746,
    fermiEnergy14MeV[24, 70] -> 0.9999999802207294,
    fermiEnergy14MeV[25, 69] -> 0.9999998436137589,
    fermiEnergy14MeV[26, 68] -> 0.9999973102738275, fermiEnergy14MeV[27, 67] ->
     0.9999907907446867, fermiEnergy14MeV[28, 66] -> -4.023843426818292,
    fermiEnergy14MeV[29, 65] -> 0.3259294902401421, fermiEnergy14MeV[30, 64] ->
     -0.2273398977272397, fermiEnergy14MeV[31, 63] -> 2.5053338102920137`,
    fermiEnergy14MeV[32, 62] -> 0.5575011287525851, fermiEnergy14MeV[33, 61] ->
     3.0573013169241645`, fermiEnergy14MeV[34, 60] -> 1.398505025310398,
    fermiEnergy14MeV[35, 59] -> 4.438283205342, fermiEnergy14MeV[36, 58] ->
     2.229464250803177, fermiEnergy14MeV[37, 57] -> 4.641478564715344,
    fermiEnergy14MeV[38, 56] -> 1.65836414716412, fermiEnergy14MeV[39, 55] ->
     3.556132309105602, fermiEnergy14MeV[40, 54] -> 0.5117806577106893,
    fermiEnergy14MeV[41, 53] -> 2.1997899807685526`,
    fermiEnergy14MeV[42, 52] -> -0.6883492302152315,
    fermiEnergy14MeV[43, 51] -> 0.6369393276897253,
    fermiEnergy14MeV[44, 50] -> -2.54828167536241,
    fermiEnergy14MeV[45, 49] -> 0.48749950354847554`,
    fermiEnergy14MeV[46, 48] -> -1.4624590404145026`,
    fermiEnergy14MeV[47, 47] -> 1.3973889861060464`,
    fermiEnergy14MeV[48, 46] -> -1.3166140257588235`,
    fermiEnergy14MeV[49, 45] -> 0.5850635216538979,
    fermiEnergy14MeV[50, 44] -> -2.6428045851777275`,
    fermiEnergy14MeV[51, 43] -> 0.6413597537984459,
    fermiEnergy14MeV[52, 42] -> -0.8918270847730025,
    fermiEnergy14MeV[53, 41] -> 2.085498116986464,
    fermiEnergy14MeV[54, 40] -> 0.29749527161534106`,
    fermiEnergy14MeV[55, 39] -> 3.533318539087341,
    fermiEnergy14MeV[56, 38] -> 1.441691808133456,
    fermiEnergy14MeV[57, 37] -> 4.372221194981397,
    fermiEnergy14MeV[58, 36] -> 1.93329618595955,
    fermiEnergy14MeV[59, 35] -> 4.060998243165829,
    fermiEnergy14MeV[60, 34] -> 1.0926179753465497`,
    fermiEnergy14MeV[61, 33] -> 2.703183400584343,
    fermiEnergy14MeV[62, 32] -> 0.03004579820214524,
    fermiEnergy14MeV[63, 31] -> 1.6724501254093644`,
    fermiEnergy14MeV[64, 30] -> -0.7984985130049961,
    fermiEnergy14MeV[65, 29] -> 0.9277279955403944,
    fermiEnergy14MeV[66, 28] -> -1.1936761649560321`,
    fermiEnergy14MeV[67, 27] -> 0.9999890444847632,
    fermiEnergy14MeV[68, 26] -> 0.9999967522792077,
    fermiEnergy14MeV[69, 25] -> 0.9999998080542749,
    fermiEnergy14MeV[70, 24] -> 0.9999999752783475,
    fermiEnergy14MeV[71, 23] -> 0.9999999994322173}};
```