```
(*1*)
(*Nuclear Species Experimental Data*)
isotopeName = "U-235";
databaseName = "JENDL-5";

atomicNumber = 92;(*Atomic number*)
neutronNumber = 144;(*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 = 2.437;(*0.0253 eV*)
promptNeutrons2 = 2.879;(*500 keV*)
promptNeutrons3 = 4.378;(*14 MeV*)

(*Neutron Separation Energy*)
neutronSeparationEnergy = 6545.5/1000;

(*Charge Distribution Experimental Data JENDL-5*)
yieldData0253eV = {{23, 8.5766000*10^(-19)}, {24, 3.9609291*10^(-14)},
    {25, 1.5370404*10^(-11)}, {26, 1.2718744*10^(-09)},
    {27, 1.2582596*10^(-08)}, {28, 2.6884379*10^(-07)}, {29, 2.8139166*10^(-06)},
    {30, 1.0958335*10^(-04)}, {31, 5.2072732*10^(-04)}, {32, 4.5082664*10^(-03)},
    {33, 8.8743287*10^(-03)}, {34, 3.9228514*10^(-02)}, {35, 5.7334365*10^(-02)},
    {36, 1.5393238*10^(-01)}, {37, 1.3474372*10^(-01)}, {38, 1.8181283*10^(-01)},
    {39, 1.2307820*10^(-01)}, {40, 1.7618210*10^(-01)}, {41, 6.7734377*10^(-02)},
    {42, 4.7654763*10^(-02)}, {43, 3.5170881*10^(-03)}, {44, 4.1602491*10^(-04)},
    {45, 2.3470808*10^(-04)}, {46, 3.0007882*10^(-04)}, {47, 3.5250657*10^(-04)},
    {48, 5.0831614*10^(-04)}, {49, 2.0004957*10^(-03)}, {50, 4.2320984*10^(-02)},
    {51, 8.2405384*10^(-02)}, {52, 1.5213206*10^(-01)}, {53, 1.1464248*10^(-01)},
    {54, 2.1162289*10^(-01)}, {55, 1.1837770*10^(-01)}, {56, 1.5451297*10^(-01)},
    {57, 7.2933367*10^(-02)}, {58, 3.3121259*10^(-02)}, {59, 1.0037554*10^(-02)},
    {60, 4.2040329*10^(-03)}, {61, 5.3483053*10^(-04)}, {62, 1.0183160*10^(-04)},
    {63, 5.8695370*10^(-06)}, {64, 3.0787602*10^(-07)}, {65, 1.3980268*10^(-08)},
    {66, 1.8243994*10^(-09)}, {67, 9.0891695*10^(-11)}, {68, 4.0348752*10^(-12)},
    {69, 1.8661035*10^(-14)}, {70, 1.7743049*10^(-17)}, {71, 0}};

yieldData500keV = {{23, 3.2077600*10^(-17)}, {24, 7.5683074*10^(-13)},
    {25, 2.0123593*10^(-10)}, {26, 1.1350877*10^(-08)},
    {27, 9.3263778*10^(-08)}, {28, 1.7388168*10^(-06)}, {29, 2.4222736*10^(-05)},
    {30, 3.4827516*10^(-04)}, {31, 1.2578970*10^(-03)}, {32, 5.7605048*10^(-03)},
    {33, 1.2050307*10^(-02)}, {34, 3.9858838*10^(-02)}, {35, 6.5097751*10^(-02)},
    {36, 1.2995918*10^(-01)}, {37, 1.3250486*10^(-01)}, {38, 2.0284674*10^(-01)},
    {39, 1.3150890*10^(-01)}, {40, 1.6201899*10^(-01)}, {41, 7.1796131*10^(-02)},
    {42, 4.0402421*10^(-02)}, {43, 2.3241592*10^(-03)}, {44, 1.0079449*10^(-03)},
    {45, 6.9268472*10^(-04)}, {46, 9.1297500*10^(-04)}, {47, 6.9869731*10^(-04)},
    {48, 1.1272403*10^(-03)}, {49, 4.4183666*10^(-03)}, {50, 5.1497674*10^(-02)},
    {51, 6.8590928*10^(-02)}, {52, 1.5453165*10^(-01)}, {53, 1.3706414*10^(-01)},
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      {54, 1.7188943 * 10^(-01)}, {55, 1.3652907 * 10^(-01)}, {56, 1.5086941 * 10^(-01)},
      {57, 7.2624384 * 10^(-02)}, {58, 3.6529878 * 10^(-02)}, {59, 9.0526842 * 10^(-03)},
      {60, 3.5425749 * 10^(-03)}, {61, 5.1810018 * 10^(-04)}, {62, 1.2967924 * 10^(-04)},
      {63, 1.0946699 * 10^(-05)}, {64, 5.4860036 * 10^(-07)}, {65, 1.9020937 * 10^(-08)},
      {66, 1.9392045 * 10^(-09)}, {67, 1.3034477 * 10^(-10)}, {68, 3.5725247 * 10^(-12)},
      {69, 8.3343000 * 10^(-15)}, {70, 2.1636800 * 10^(-18)}, {71, 0}};
yieldData14MeV = {{23, 3.3391300 * 10^(-13)}, {24, 9.6058077 * 10^(-10)},
      {25, 1.3773198 * 10^(-07)}, {26, 3.0157961 * 10^(-06)}, {27, 1.6930527 * 10^(-05)},
      {28, 7.0419611 * 10^(-05)}, {29, 2.5311893 * 10^(-04)}, {30, 8.0627874 * 10^(-04)},
      {31, 2.4728735 * 10^(-03)}, {32, 6.9742438 * 10^(-03)}, {33, 1.9781095 * 10^(-02)},
      {34, 3.7855295 * 10^(-02)}, {35, 6.2882566 * 10^(-02)}, {36, 9.8012757 * 10^(-02)},
      {37, 1.2035161 * 10^(-01)}, {38, 1.3027861 * 10^(-01)}, {39, 1.3035323 * 10^(-01)},
      {40, 1.1691817 * 10^(-01)}, {41, 9.5656682 * 10^(-02)}, {42, 6.5191619 * 10^(-02)},
      {43, 3.9035544 * 10^(-02)}, {44, 2.9249812 * 10^(-02)}, {45, 2.6062944 * 10^(-02)},
      {46, 2.7346469 * 10^(-02)}, {47, 2.8920599 * 10^(-02)}, {48, 3.4029203 * 10^(-02)},
      {49, 4.1212042 * 10^(-02)}, {50, 7.1619117 * 10^(-02)}, {51, 9.1805239 * 10^(-02)},
      {52, 1.1671896 * 10^(-01)}, {53, 1.3073591 * 10^(-01)}, {54, 1.2821899 * 10^(-01)},
      {55, 1.1856221 * 10^(-01)}, {56, 9.8728123 * 10^(-02)}, {57, 6.5797732 * 10^(-02)},
      {58, 3.6317422 * 10^(-02)}, {59, 1.6507219 * 10^(-02)}, {60, 6.9152513 * 10^(-03)},
      {61, 2.8408216 * 10^(-03)}, {62, 1.0564420 * 10^(-03)}, {63, 3.2650199 * 10^(-04)},
      {64, 8.7299794 * 10^(-05)}, {65, 2.0929169 * 10^(-05)}, {66, 5.0668468 * 10^(-06)},
      {67, 1.1936741 * 10^(-06)}, {68, 2.3421859 * 10^(-07)}, {69, 1.6309175 * 10^(-08)},
      {70, 2.1292989 * 10^(-10)}, {71, 3.0924600 * 10^(-13)}}};

optResult0253eVRe1 =
  {2.1051552805708`*^-15, {effectiveDistance0253eV[23, 69] -> 0.1655406005828211`,
    effectiveDistance0253eV[24, 68] -> 0.43598663677740257`,
    effectiveDistance0253eV[25, 67] -> 0.7314453175569223`,
    effectiveDistance0253eV[26, 66] -> 0.8718773384017956`,
    effectiveDistance0253eV[27, 65] -> 0.9183581514138327`,
    effectiveDistance0253eV[28, 64] -> 0.9597157735647778`,
    effectiveDistance0253eV[29, 63] -> 0.9891828454678229`,
    effectiveDistance0253eV[30, 62] -> 1.0160777627209463`,
    effectiveDistance0253eV[31, 61] -> 1.0422565137086315`,
    effectiveDistance0253eV[32, 60] -> 1.0655983745331308`,
    effectiveDistance0253eV[33, 59] -> 1.0889388985948498`,
    effectiveDistance0253eV[34, 58] -> 1.109249937905919`,
    effectiveDistance0253eV[35, 57] -> 1.1293022592698674`,
    effectiveDistance0253eV[36, 56] -> 1.1458135871784887`,
    effectiveDistance0253eV[37, 55] -> 1.1623556649936426`,
    effectiveDistance0253eV[38, 54] -> 1.1747233609151382`,
    effectiveDistance0253eV[39, 53] -> 1.187629914769033`,
    effectiveDistance0253eV[40, 52] -> 1.1970318826321948`,
    effectiveDistance0253eV[41, 51] -> 1.2067529939253379`,
    effectiveDistance0253eV[42, 50] -> 1.2132339749925594`,
    effectiveDistance0253eV[43, 49] -> 1.2203532127377656`,
    effectiveDistance0253eV[44, 48] -> 1.223358906273349`,
    effectiveDistance0253eV[45, 47] -> 1.2274296146110164`,
    effectiveDistance0253eV[46, 46] -> 1.2273936790378128`,
    effectiveDistance0253eV[47, 45] -> 1.2276392974251722`,
    effectiveDistance0253eV[48, 44] -> 1.223461724318226`,
    effectiveDistance0253eV[49, 43] -> 1.220064149840221`,
    effectiveDistance0253eV[50, 42] -> 1.2131735598352793`,
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        effectiveDistance0253eV[51, 41] -> 1.2068523700377065`,
        effectiveDistance0253eV[52, 40] -> 1.1969581121230866`,
        effectiveDistance0253eV[53, 39] -> 1.1875944526683497`,
        effectiveDistance0253eV[54, 38] -> 1.1747983751051947`,
        effectiveDistance0253eV[55, 37] -> 1.1622922464121292`,
        effectiveDistance0253eV[56, 36] -> 1.1458154042539839`,
        effectiveDistance0253eV[57, 35] -> 1.129416886337513`,
        effectiveDistance0253eV[58, 34] -> 1.1091708155183344`,
        effectiveDistance0253eV[59, 33] -> 1.088995476465894`,
        effectiveDistance0253eV[60, 32] -> 1.0655669939053334`,
        effectiveDistance0253eV[61, 31] -> 1.042268261789026`,
        effectiveDistance0253eV[62, 30] -> 1.0160463418557644`,
        effectiveDistance0253eV[63, 29] -> 0.9894894953591358`,
        effectiveDistance0253eV[64, 28] -> 0.9597705525844759`,
        effectiveDistance0253eV[65, 27] -> 0.918358151414903`,
        effectiveDistance0253eV[66, 26] -> 0.871877338403737`,
        effectiveDistance0253eV[67, 25] -> 0.7314453175586401`,
        effectiveDistance0253eV[68, 24] -> 0.4359866367830708`,
        effectiveDistance0253eV[69, 23] -> 0.16554060059094222`}};

optResult500keVRe1 =
  {1.8822730779747127`*^-12, {effectiveDistance500keV[23, 69] -> 0.2531400969370128`,
    effectiveDistance500keV[24, 68] -> 0.5950034809857312`,
    effectiveDistance500keV[25, 67] -> 0.7788019533140375`,
    effectiveDistance500keV[26, 66] -> 0.8358887801687693`,
    effectiveDistance500keV[27, 65] -> 0.8916507201386054`,
    effectiveDistance500keV[28, 64] -> 0.9563428794360441`,
    effectiveDistance500keV[29, 63] -> 0.9840786506039524`,
    effectiveDistance500keV[30, 62] -> 1.0088277474063585`,
    effectiveDistance500keV[31, 61] -> 1.033041989539442`,
    effectiveDistance500keV[32, 60] -> 1.054461623484333`,
    effectiveDistance500keV[33, 59] -> 1.0759701301841413`,
    effectiveDistance500keV[34, 58] -> 1.094412752337937`,
    effectiveDistance500keV[35, 57] -> 1.112814715407252`,
    effectiveDistance500keV[36, 56] -> 1.1277720484019873`,
    effectiveDistance500keV[37, 55] -> 1.1429439054381303`,
    effectiveDistance500keV[38, 54] -> 1.1543996432965684`,
    effectiveDistance500keV[39, 53] -> 1.1661949396047027`,
    effectiveDistance500keV[40, 52] -> 1.1750413448671788`,
    effectiveDistance500keV[41, 51] -> 1.1840902245430962`,
    effectiveDistance500keV[42, 50] -> 1.1899464713307042`,
    effectiveDistance500keV[43, 49] -> 1.1961388770858843`,
    effectiveDistance500keV[44, 48] -> 1.1994432736521448`,
    effectiveDistance500keV[45, 47] -> 1.2031964326016054`,
    effectiveDistance500keV[46, 46] -> 1.2032381237186254`,
    effectiveDistance500keV[47, 45] -> 1.2032010403029643`,
    effectiveDistance500keV[48, 44] -> 1.1995026670231144`,
    effectiveDistance500keV[49, 43] -> 1.196479387787287`,
    effectiveDistance500keV[50, 42] -> 1.19007437254458`,
    effectiveDistance500keV[51, 41] -> 1.184066236720202`,
    effectiveDistance500keV[52, 40] -> 1.1750166773918376`,
    effectiveDistance500keV[53, 39] -> 1.1662163882126046`,
    effectiveDistance500keV[54, 38] -> 1.1543146078429642`,
    effectiveDistance500keV[55, 37] -> 1.1429591555289609`,
    effectiveDistance500keV[56, 36] -> 1.127847144112482`,
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        effectiveDistance500keV[57, 35] -> 1.1128691832065234`,
        effectiveDistance500keV[58, 34] -> 1.0943700258928235`,
        effectiveDistance500keV[59, 33] -> 1.0758320813103013`,
        effectiveDistance500keV[60, 32] -> 1.054231515592738`,
        effectiveDistance500keV[61, 31] -> 1.032629806681754`,
        effectiveDistance500keV[62, 30] -> 1.00837897686658`,
        effectiveDistance500keV[63, 29] -> 0.9837259690970167`,
        effectiveDistance500keV[64, 28] -> 0.9558449442535443`,
        effectiveDistance500keV[65, 27] -> 0.8916507201406495`,
        effectiveDistance500keV[66, 26] -> 0.8358887801700531`,
        effectiveDistance500keV[67, 25] -> 0.7788019533155881`,
        effectiveDistance500keV[68, 24] -> 0.5950034809908306`,
        effectiveDistance500keV[69, 23] -> 0.2531400969443531`}};

    optResult14MeVRe1 =
      {0.00028234218992282225`, {effectiveDistance14MeV[23, 69] -> 0.07778987155313051`,
        effectiveDistance14MeV[24, 68] -> 0.3461559533574328`,
        effectiveDistance14MeV[25, 67] -> 0.6183551554131287`,
        effectiveDistance14MeV[26, 66] -> 0.8310368977725848`,
        effectiveDistance14MeV[27, 65] -> 0.9512768027837901`,
        effectiveDistance14MeV[28, 64] -> 0.9743286249706616`,
        effectiveDistance14MeV[29, 63] -> 1.004883243065489`,
        effectiveDistance14MeV[30, 62] -> 1.0322007703239322`,
        effectiveDistance14MeV[31, 61] -> 1.0596452197690174`,
        effectiveDistance14MeV[32, 60] -> 1.083792607098032`,
        effectiveDistance14MeV[33, 59] -> 1.108470357034675`,
        effectiveDistance14MeV[34, 58] -> 1.1288618036870564`,
        effectiveDistance14MeV[35, 57] -> 1.1495040552755773`,
        effectiveDistance14MeV[36, 56] -> 1.1662717500705844`,
        effectiveDistance14MeV[37, 55] -> 1.183331803549621`,
        effectiveDistance14MeV[38, 54] -> 1.1960731509136704`,
        effectiveDistance14MeV[39, 53] -> 1.209531428498956`,
        effectiveDistance14MeV[40, 52] -> 1.21915386471693`,
        effectiveDistance14MeV[41, 51] -> 1.229397989506053`,
        effectiveDistance14MeV[42, 50] -> 1.2354779073288729`,
        effectiveDistance14MeV[43, 49] -> 1.243057874377909`,
        effectiveDistance14MeV[44, 48] -> 1.2465425399268322`,
        effectiveDistance14MeV[45, 47] -> 1.2507058897818513`,
        effectiveDistance14MeV[46, 46] -> 1.2506473465078995`,
        effectiveDistance14MeV[47, 45] -> 1.2508805028943317`,
        effectiveDistance14MeV[48, 44] -> 1.2467953744398534`,
        effectiveDistance14MeV[49, 43] -> 1.243148289730159`,
        effectiveDistance14MeV[50, 42] -> 1.2356333102668915`,
        effectiveDistance14MeV[51, 41] -> 1.2293303807589908`,
        effectiveDistance14MeV[52, 40] -> 1.2191510862202022`,
        effectiveDistance14MeV[53, 39] -> 1.2095361716370328`,
        effectiveDistance14MeV[54, 38] -> 1.196047659431726`,
        effectiveDistance14MeV[55, 37] -> 1.1833080455948657`,
        effectiveDistance14MeV[56, 36] -> 1.1662831218795755`,
        effectiveDistance14MeV[57, 35] -> 1.1495740796302636`,
        effectiveDistance14MeV[58, 34] -> 1.1287988560729085`,
        effectiveDistance14MeV[59, 33] -> 1.108200314851825`,
        effectiveDistance14MeV[60, 32] -> 1.083780222129437`,
        effectiveDistance14MeV[61, 31] -> 1.059843084474583`,
        effectiveDistance14MeV[62, 30] -> 1.0325758046979552`,
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      effectiveDistance14MeV[63, 29] -> 1.0052272110831701`,
      effectiveDistance14MeV[64, 28] -> 0.9746095877878383`,
      effectiveDistance14MeV[65, 27] -> 0.9512768027837973`,
      effectiveDistance14MeV[66, 26] -> 0.8310368977726448`,
      effectiveDistance14MeV[67, 25] -> 0.6183551554127691`,
      effectiveDistance14MeV[68, 24] -> 0.34615595335718025`,
      effectiveDistance14MeV[69, 23] -> 0.07778987155315406`}};

optResult0253eVRe2 = {1.4733717889819385`*^-15,
    {fermiEnergy0253eV[23, 69] -> 1.`, fermiEnergy0253eV[24, 68] -> 1.`,
     fermiEnergy0253eV[25, 67] -> 1.0000000000000067`, fermiEnergy0253eV[26, 66] ->
      1.0000000000327647`, fermiEnergy0253eV[27, 65] -> 1.0000000007118528`,
     fermiEnergy0253eV[28, 64] -> -1.055688369688025`, fermiEnergy0253eV[29, 63] ->
      0.6416987452214251`, fermiEnergy0253eV[30, 62] -> -0.18031008307287044`,
     fermiEnergy0253eV[31, 61] -> 1.3912547292827522`, fermiEnergy0253eV[32, 60] ->
      -0.02297002351972778`, fermiEnergy0253eV[33, 59] -> 2.5409578122348795`,
     fermiEnergy0253eV[34, 58] -> 1.79151532351358`, fermiEnergy0253eV[35, 57] ->
      4.214101198184661`, fermiEnergy0253eV[36, 56] -> 2.3619891109894984`,
     fermiEnergy0253eV[37, 55] -> 4.228001717881696`, fermiEnergy0253eV[38, 54] ->
      0.6407134951067082`, fermiEnergy0253eV[39, 53] -> 1.7732227958616806`,
     fermiEnergy0253eV[40, 52] -> -0.9940937365267905`,
     fermiEnergy0253eV[41, 51] -> 0.3651227737780005`,
     fermiEnergy0253eV[42, 50] -> -1.5657883983017533`,
     fermiEnergy0253eV[43, 49] -> 1.1925229178346233`,
     fermiEnergy0253eV[44, 48] -> -1.0809419875227673`,
     fermiEnergy0253eV[45, 47] -> 2.153302605674728`,
     fermiEnergy0253eV[46, 46] -> 0.40999641689098676`,
     fermiEnergy0253eV[47, 45] -> 2.571698456694692`,
     fermiEnergy0253eV[48, 44] -> -0.8828723319323527`,
     fermiEnergy0253eV[49, 43] -> 0.5871263172935169`,
     fermiEnergy0253eV[50, 42] -> -1.7118455231672545`,
     fermiEnergy0253eV[51, 41] -> 0.5429481264258758`,
     fermiEnergy0253eV[52, 40] -> -1.1817956025183969`,
     fermiEnergy0253eV[53, 39] -> 1.6588562689736783`,
     fermiEnergy0253eV[54, 38] -> 0.7555301239334847`,
     fermiEnergy0253eV[55, 37] -> 4.038105622997549`,
     fermiEnergy0253eV[56, 36] -> 2.306810516824334`,
     fermiEnergy0253eV[57, 35] -> 4.405852759783229`,
     fermiEnergy0253eV[58, 34] -> 1.5347916235263097`,
     fermiEnergy0253eV[59, 33] -> 2.592427712133039`,
     fermiEnergy0253eV[60, 32] -> -0.19046640187881225`,
     fermiEnergy0253eV[61, 31] -> 1.3201232269105343`,
     fermiEnergy0253eV[62, 30] -> -0.3727288408587609`,
     fermiEnergy0253eV[63, 29] -> 1.3437471706300592`,
     fermiEnergy0253eV[64, 28] -> -1.0368718486288846`,
     fermiEnergy0253eV[65, 27] -> 1.0000000008105154`,
     fermiEnergy0253eV[66, 26] -> 1.0000000000377538`,
     fermiEnergy0253eV[67, 25] -> 1.0000000000000082`,
     fermiEnergy0253eV[68, 24] -> 1.`, fermiEnergy0253eV[69, 23] -> 1.`}};

optResult500keVRe2 =
    {1.2189902629543487`*^-13, {fermiEnergy500keV[23, 69] -> 0.999999999999983`,
     fermiEnergy500keV[24, 68] -> 0.999999999997621`,
     fermiEnergy500keV[25, 67] -> 0.9999999999547582`, fermiEnergy500keV[26, 66] ->
      0.9999999872796225`, fermiEnergy500keV[27, 65] -> 0.9999999519265211`,
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      fermiEnergy500keV[28, 64] -> -2.077456827017149`, fermiEnergy500keV[29, 63] ->
        1.2083636889654839`, fermiEnergy500keV[30, 62] -> 0.41350874011386396`,
      fermiEnergy500keV[31, 61] -> 2.177043976736283`, fermiEnergy500keV[32, 60] ->
        0.6741152701416143`, fermiEnergy500keV[33, 59] -> 3.1428833203815247`,
      fermiEnergy500keV[34, 58] -> 1.834677703400491`, fermiEnergy500keV[35, 57] ->
        4.0138052505331645`, fermiEnergy500keV[36, 56] -> 1.7242410265958017`,
      fermiEnergy500keV[37, 55] -> 3.402248496286154`, fermiEnergy500keV[38, 54] ->
        0.1687502685579069`, fermiEnergy500keV[39, 53] -> 1.0836763344702784`,
      fermiEnergy500keV[40, 52] -> -1.121608820123527`,
      fermiEnergy500keV[41, 51] -> 0.4099296911676887`,
      fermiEnergy500keV[42, 50] -> -1.6557772869766278`,
      fermiEnergy500keV[43, 49] -> 0.23654937337567664`,
      fermiEnergy500keV[44, 48] -> -0.7845888049593721`,
      fermiEnergy500keV[45, 47] -> 2.3427570464838654`,
      fermiEnergy500keV[46, 46] -> 0.8480024000023594`,
      fermiEnergy500keV[47, 45] -> 2.383911292208509`,
      fermiEnergy500keV[48, 44] -> -0.5959689030015193`,
      fermiEnergy500keV[49, 43] -> 1.0534214168620246`,
      fermiEnergy500keV[50, 42] -> -1.2553055227460148`,
      fermiEnergy500keV[51, 41] -> 0.5187537189587865`,
      fermiEnergy500keV[52, 40] -> -0.9809965759323183`,
      fermiEnergy500keV[53, 39] -> 1.3595062316717088`,
      fermiEnergy500keV[54, 38] -> 0.24502239134821074`,
      fermiEnergy500keV[55, 37] -> 3.73864783154893`,
      fermiEnergy500keV[56, 36] -> 2.2368335700025392`,
      fermiEnergy500keV[57, 35] -> 4.522296292039114`,
      fermiEnergy500keV[58, 34] -> 2.158708592873872`,
      fermiEnergy500keV[59, 33] -> 3.2796642271518963`,
      fermiEnergy500keV[60, 32] -> 0.6217986347593873`,
      fermiEnergy500keV[61, 31] -> 1.6972527816787484`,
      fermiEnergy500keV[62, 30] -> -0.13920082831744793`,
      fermiEnergy500keV[63, 29] -> 0.9400483624679566`,
      fermiEnergy500keV[64, 28] -> -2.725993983363563`,
      fermiEnergy500keV[65, 27] -> 0.9999999755148855`,
      fermiEnergy500keV[66, 26] -> 0.9999999938856929`,
      fermiEnergy500keV[67, 25] -> 0.9999999999795887`,
      fermiEnergy500keV[68, 24] -> 0.9999999999989991`,
      fermiEnergy500keV[69, 23] -> 0.9999999999999992`}};

  optResult14MeVRe2 =
    {2.2391896489632696`*^-9, {fermiEnergy14MeV[23, 69] -> 0.9999999999631977`,
      fermiEnergy14MeV[24, 68] -> 0.99999999654015`,
      fermiEnergy14MeV[25, 67] -> 0.9999999511202308`, fermiEnergy14MeV[26, 66] ->
        0.9999987425330057`, fermiEnergy14MeV[27, 65] -> 0.9999941029872305`,
      fermiEnergy14MeV[28, 64] -> -1.51525167873592`, fermiEnergy14MeV[29, 63] ->
        0.640166234796925`, fermiEnergy14MeV[30, 62] -> -1.2268937138527638`,
      fermiEnergy14MeV[31, 61] -> 1.4669140986840121`, fermiEnergy14MeV[32, 60] ->
        0.23593612993872287`, fermiEnergy14MeV[33, 59] -> 4.17473227423596`,
      fermiEnergy14MeV[34, 58] -> 2.1560428411577934`, fermiEnergy14MeV[35, 57] ->
        4.482242602270364`, fermiEnergy14MeV[36, 56] -> 2.0828587688398685`,
      fermiEnergy14MeV[37, 55] -> 3.948366911990892`, fermiEnergy14MeV[38, 54] ->
        0.3567950061582016`, fermiEnergy14MeV[39, 53] -> 1.7874493335774964`,
      fermiEnergy14MeV[40, 52] -> -1.1153490412641855`, fermiEnergy14MeV[41, 51] ->
        0.6688991256942051`, fermiEnergy14MeV[42, 50] -> -2.453888697595999`,
      fermiEnergy14MeV[43, 49] -> 0.7557244183508449`, fermiEnergy14MeV[44, 48] ->
```

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     -0.7532817724026994`, fermiEnergy14MeV[45, 47] -> 2.3859480428510365`,
fermiEnergy14MeV[46, 46] -> 0.607547889681328`, fermiEnergy14MeV[47, 45] ->
     2.710377934278084`, fermiEnergy14MeV[48, 44] -> -0.289712362755068`,
fermiEnergy14MeV[49, 43] -> 0.8856253163485862`, fermiEnergy14MeV[50, 42] ->
     -2.209507907538681`, fermiEnergy14MeV[51, 41] -> 0.45273040450490004`,
fermiEnergy14MeV[52, 40] -> -1.2191320203386906`, fermiEnergy14MeV[53, 39] ->
     1.6812550428453104`, fermiEnergy14MeV[54, 38] -> 0.16957349956850434`,
fermiEnergy14MeV[55, 37] -> 3.7448884285176556`, fermiEnergy14MeV[56, 36] ->
     1.933508830876458`, fermiEnergy14MeV[57, 35] -> 4.43983090597029`,
fermiEnergy14MeV[58, 34] -> 1.797913597769836`, fermiEnergy14MeV[59, 33] ->
     3.3161425558156883`, fermiEnergy14MeV[60, 32] -> -0.061028980630208465`,
fermiEnergy14MeV[61, 31] -> 1.6508120003525901`, fermiEnergy14MeV[62, 30] ->
     -0.6109087209385037`, fermiEnergy14MeV[63, 29] -> 1.175988852765344`,
fermiEnergy14MeV[64, 28] -> -1.1488295806572428`, fermiEnergy14MeV[65, 27] ->
     0.9999933373244105`, fermiEnergy14MeV[66, 26] -> 0.9999985630074139`,
fermiEnergy14MeV[67, 25] -> 0.9999999434305726`, fermiEnergy14MeV[68, 24] ->
     0.999999995938566`, fermiEnergy14MeV[69, 23] -> 0.9999999999560965`}};
```