64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance total cross section

![Graph showing the total cross section as a function of energy. The x-axis represents energy in MeV, ranging from $10^{-5}$ to $10^{-4}$, and the y-axis represents cross section in barns, ranging from $10^{-5}$ to $10^{3}$. The graph has a peak representing the resonance effect at a specific energy level.](image-url)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance total cross section

Energy (MeV)

Cross section (barns)

- total
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance total cross section
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance total cross section

Cross section (barns)

Energy (MeV)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance absorption cross sections

capture
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance absorption cross sections

![Graph showing the cross section (barns) vs. energy (MeV). The graph has a logarithmic scale for both axes, ranging from 10^{-2} to 10^3 for the cross section and from 10^{-4} to 10^{-3} for the energy. The data shows a pattern of peaks and valleys, characteristic of resonance absorption. The graph is labeled with "capture" for the plotted line.]
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance absorption cross sections

capture
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance absorption cross sections

capture

Cross section (barns) vs. Energy (MeV)
'64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
UR total cross section

\[
\begin{align*}
\text{Energy (MeV)} & \\
\text{Cross section (barns)} & \\
\text{Inf. Dil.} & 100 \text{ b} \\
& 1 \text{ b}
\end{align*}
\]
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
UR elastic cross section

Cross section (barns)

Energy (MeV)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
UR capture cross section
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Non-threshold reactions

Energy (MeV)

Cross section (barns)

- (n,gma)
- (n,a)
- (n,xa)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Principal cross sections

![Graph showing cross sections as a function of energy](image)

- Total cross section
- Absorption cross section
- Elastic cross section
- Gamma production cross section

Cross section (barns) vs. Energy (MeV)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Heating

Heating (MeV/reaction) vs. Energy (MeV)

- Heating vs. Energy

Energy (MeV) range: 0 to 200
Heating (MeV/reaction) range: 0 to 40
Damage vs Energy (MeV)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Non-threshold reactions

Cross section (barns)

Energy (MeV)

(n,gma)
(n,a)
(n,xa)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels

![Graph showing cross section vs. energy for inelastic levels in FENDL-3.2]
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels

Energy (MeV)

Cross section (barns)

- (n,n*6)
- (n,n*7)
- (n,n*8)
- (n,n*9)
- (n,n*10)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels

Cross section (barns)

Energy (MeV)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels

Energy (MeV)

Cross section (barns)

(n,n*21)
(n,n*22)
(n,n*23)
(n,n*24)
(n,n*25)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels

Energy (MeV)

Cross section (barns)

- (n,n*26)
- (n,n*27)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

Cross section (barns)

Energy (MeV)

- (n,x)
- (n,2n)
- (n,3n)
- (n,n*)
- (n,2n)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+ Threshold reactions

Cross section (barns) vs. Energy (MeV)

- (n,n*)p
- (n,n*)d
- (n,n*c)
- (n,p)
- (n,d)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

```
Energy (MeV)
```

```
Cross section (barns)
```

- (n,xhe3)
angular distribution for elastic
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for elastic
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*1)
angular distribution for (n,n^2)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*4)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*5)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*6)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*7)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*8)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*9)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*10)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*11)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*12)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*13)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*14)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*15)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*16)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*17)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*18)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*19)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for \((n,n^*20)\)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*21)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for \((n,n^\ast22)\)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*23)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*24)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*25)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*26)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*27)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Neutron emission for (n,x)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Neutron emission for (n,2n)
Neutron emission for (n,3n)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Neutron emission for (n,n*)a
Neutron emission for (n,2n)a

64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Neutron emission for \((n,n^*)d\)
Neutron emission for (n,n*\textit{c})
Photon emission for (n,x)
Photon emission for (n,2n)
Photon emission for (n,3n)
Photon emission for (n,n*)a
Photon emission for (n,2n)a

3D histogram showing the probability of photon emission as a function of energy, with logarithmic scales on the y-axis (Prob/MeV) and the x-axis (Eγ (MeV)).
Photon emission for \((n,n^*)p\)
Phonon emission for \((n,n^*)d\)
Photon emission for (n,n*1)
Photon emission for (n,n*2)
Photon emission for (n,n*3)
Photon emission for (n,n*4)
Photon emission for (n,n*5)
Photon emission for (n,n*6)
Photon emission for (n,n*7)
Photon emission for \((n,n^*8)\)
Photon emission for \((n,n^{*9})\)
Photon emission for (n,n*10)
Photon emission for \((n,n^*11)\)
Photon emission for \((n,n*12)\)
Photon emission for (n,n*13)
Photon emission for (n,n*14)
Photon emission for (n,n*15)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Photon emission for (n,n*16)
Photon emission for (n,n*17)
Photon emission for (n,n'18)
Photon emission for (n,n*19)
Photon emission for (n,n*20)
Photon emission for (n,n*21)
Photon emission for \((n,n'^{22})\)
Photon emission for (n,n*23)
Photon emission for (n,n\*24)
Photon emission for \( (n,n^{*25}) \)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Photon emission for (n,n*26)
Photon emission for (n,n*27)
Photon emission for (n,n*c)
Photon emission for (n,gma)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
thermal capture photon spectrum
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
14 MeV photon spectrum

Gamma Energy (MeV)

Gamma Prod (barns/MeV)
Particle heating contributions

- Protons
- Deuterons
- Tritons
- He-3
- Alphas
Recoil Heating

Energy (MeV) vs. Heating (MeV/reaction)

- Heating increases with energy.
- There are significant fluctuations at higher energies.

The graph shows the relationship between energy and recoil heating, indicating a non-linear increase with energy, particularly noticeable at higher energies.
Particle production cross sections

- Protons
- Deuterons
- Tritons
- He-3
- Alphas

Energy (MeV) vs. Cross section (barns) graph.
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
protons from (n,x)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
protons from (n,n*)p
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
deuterons from (n,x)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
deuterons from (n,n*)d
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
tritons from (n,x)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
he3s from (n,x)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
alphas from (n,x)
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
alphas from (n,n*)a
64-GD-158 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
alphas from (n,2n)a