20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance total cross section

![Graph showing total cross section versus energy.](image-url)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance total cross section

Energy (MeV)

Cross section (barns)

total
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance total cross section

![Graph of resonance total cross section](image)

**Energy (MeV)**

**Cross section (barns)**
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance total cross section
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance absorption cross sections

![Graph showing capture cross section vs. Energy (MeV)]
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance absorption cross sections
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance absorption cross sections
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
resonance absorption cross sections

![Graph showing capture cross section as a function of energy.
The graph plots cross section (barns) on the y-axis and energy (MeV) on the x-axis.
There is a sharp rise in the capture cross section at the beginning, followed by a gradual decrease.
The x-axis is labeled as Energy (MeV) ranging from $10^0$ to $10^1$.
The y-axis is labeled as Cross section (barns) ranging from $10^{-3}$ to $10^0$.
]
Energy (MeV) vs. Heating (MeV/reaction) graph

Heating line:

- Heating is plotted on a logarithmic scale on the y-axis.
- Energy is plotted on a logarithmic scale on the x-axis.

The graph shows a trend where the heating increases significantly with decreasing energy.
Energy (MeV) vs. Damage (MeV-barns)
Non-threshold reactions

Energy (MeV)

Cross section (barns)

(n,gma)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Principal cross sections

Energy (MeV)

Cross section (barns)

- total
- absorption
- elastic
- gamma production
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
 Heating

![Graph showing the relationship between Heating (MeV/reaction) and Energy (MeV). The graph is a curve that increases as the energy increases.](image-url)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+

Damage

Damage (MeV-barns) vs. Energy (MeV)

- damage

*10^{-3}

0 20 40 60 80 100 120 140 160

Energy (MeV)

0 20 40 60 80 100 120 140 160

Damage (MeV-barns)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Non-threshold reactions

![Graph showing cross section vs. energy in barns. The x-axis represents energy in MeV, ranging from 0 to 20, and the y-axis represents cross section in barns, ranging from $10^{-4}$ to 1. The graph includes a curve labeled (n,gma).]
Inelastic levels

Cross section (barns)

Energy (MeV)

(n,n^1)

(n,n^2)

(n,n^3)

(n,n^4)

(n,n^5)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels

Cross section (barns)

Energy (MeV)

(n,n^6)
(n,n^7)
(n,n^8)
(n,n^9)
(n,n^10)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels

The graph shows the cross section for inelastic scattering at various energies. The x-axis represents the energy in MeV, and the y-axis represents the cross section in barns. Different curves correspond to different inelastic levels, labeled as (n,n\textsuperscript{11}) to (n,n\textsuperscript{15}).
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels

![Graph showing cross sections for different energies]
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels

Energy (MeV) vs. Cross section (barns)

- (n,n^26)
- (n,n^27)
- (n,n^28)
- (n,n^29)
- (n,n^30)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Inelastic levels

Cross section (barns)

Energy (MeV)

(n,n*31)
(n,n*32)
(n,n*33)
(n,n*34)
(n,n*35)
Threshold reactions

Cross section (barns) vs. Energy (MeV)

- (n,x)
- (n,2n)
- (n,n*)a
- (n,n*)p
- (n,n*c)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

![Graph showing cross-sections for (n,p) and (n,a) reactions as a function of energy.](image-url)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

Cross section (barns)

Energy (MeV)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

![Graph showing cross section vs. energy for different reactions](image-url)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

Energy (MeV) vs Cross section (barns)

- (n,p\textsuperscript{6})
- (n,p\textsuperscript{7})
- (n,p\textsuperscript{8})
- (n,p\textsuperscript{9})
- (n,p\textsuperscript{10})
Threshold reactions

Cross section (barns)

Energy (MeV)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

![Graph showing cross section vs energy for different reactions](image)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

Cross section (barns)

Energy (MeV)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

Cross section (barns)

Energy (MeV)
Threshold reactions

Energy (MeV) vs Cross section (barns) for different reactions:
- (n,a*0)
- (n,a*1)
- (n,a*2)
- (n,a*3)
- (n,a*4)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

Energy (MeV)

*10^{-3}

Cross section (barns)

(n,a^5)
(n,a^6)
(n,a^7)
(n,a^8)
(n,a^9)

Energy (MeV)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Threshold reactions

Cross section (barns)

Energy (MeV)

(n,a\text{*25})
(n,a\text{*26})
(n,a\text{*27})
(n,a\text{*28})
(n,a\text{*29})
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for elastic
angular distribution for elastic
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*1)
angular distribution for (n,n*2)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*3)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*4)
angular distribution for (n,n*5)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for \((n, n^*6)\)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for \((n,n^*7)\)
angular distribution for (n,n*9)
angular distribution for (n,n*10)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*11)
angular distribution for \((n,n^{*12})\)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*13)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*14)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*15)
angular distribution for (n,n*16)
angular distribution for (n,n*17)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*18)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*19)
angular distribution for (n,n*20)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*21)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*22)
angular distribution for \((n,n^*23)\)
angular distribution for (n,n*24)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*25)
angular distribution for (n,n*26)
angular distribution for (n,n*27)
angular distribution for \((n,n^{*28})\)
angular distribution for (n,n^{*}29)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for \((n,n*30)\)
angular distribution for (n,n*31)
angular distribution for (n,n*32)
angular distribution for \((n,n*33)\)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*34)
angular distribution for (n,n*35)
angular distribution for (n,n*36)
angular distribution for \((n,n*37)\)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
angular distribution for (n,n*38)
angular distribution for $(n,n*39)$
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Neutron emission for (n,x)
Neutron emission for (n,2n)
Neutron emission for \((n,n^*)a\)
Neutron emission for (n,n*)p
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Neutron emission for (n,n*c)
Photon emission for (n,x)
Photon emission for (n,2n)
Photon emission for (n,n*)a
Photon emission for (n,n\*1)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Photon emission for \( (n,n^*2) \)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
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 \((n,n^\ast 13)\)
Photon emission for (n,n*14)
Photon emission for \((n,n^*15)\)
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 \((n,n^*25)\)
Photon emission for \((n,n^*26)\)
Photon emission for (n,n*27)
Photon emission for $(n,n^*28)$
Photon emission for (n,n*29)
Photon emission for (n,n*30)
Photon emission for (n,n*31)
Photon emission for (n,n*32)
Photon emission for \((n,n^{*33})\)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Photon emission for (n.n*34)
Photon emission for (n,n*35)
Photon emission for (n,n*36)
Photon emission for (n,n^{*37})
Photon emission for (n,n*38)
Photon emission for (n,n*39)
Photon emission for (n,n*\text{c})
Photon emission for (n,gma)
Photon emission for (n,p*1)
Photon emission for (n,p*2)
Photon emission for \((n,p^*3)\)
Photon emission for (n,p*4)
Photon emission for (n,p*5)
Photon emission for (n,p*6)
Phon emission for (n,p*7)
Photon emission for (n,p*8)
Photon emission for (n,p\*10)
Photon emission for (n,p*11)
Photon emission for (n, p*12)
Photon emission for (n,p*13)
Photon emission for (n,p*14)

20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Photon emission for (n,p*15)
Photon emission for (n,p*16)
Photon emission for (n,p*17)
Photon emission for (n,p*18)
Photon emission for (n,p*19)
Photon emission for (n,p*20)
Photon emission for (n,p*21)
Photon emission for (n,p*22)
Photon emission for (n,p*23)
Photon emission for (n,p*24)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Photon emission for (n,p*25)
Photon emission for (n,p*27)
Photon emission for (n,p\*28)
Photon emission for (n,p*29)
Photon emission for (n,p*30)
Photon emission for (n,p*31)
Photon emission for (n,p*32)
Photon emission for (n,p*33)
Photon emission for (n,p*34)
Photon emission for (n,p*35)
Photon emission for (n,p*36)
Photon emission for (n,p*37)
Photon emission for (n,p*38)
Photon emission for (n, p)*39
Phonon emission for (n,p*\textit{c})
Photon emission for (n,a*2)
Photon emission for (n,a*3)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Photon emission for (n,a*4)
Photon emission for (n,a*5)
Photon emission for (n,a*6)
Photon emission for (n,a*7)
Photon emission for (n,a*8)
Photon emission for \((n, a^9)\)
Photon emission for (n,a*10)
Photon emission for (n,a*11)

Prob/MeV

$E_\gamma$ (MeV)

$E_n$ (MeV)
Photon emission for \((n,a^*12)\)
Photon emission for (n,a*13)
Photon emission for (n,a*14)
Photon emission for (n,a*15)
Photon emission for (n,a*16)
Photon emission for (n,a*17)
Photon emission for (n,a*18)
Photon emission for (n,a*19)
Photon emission for (n,a*23)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
Photon emission for (n,a*30)
Photon emission for (n,a*c)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
thermal capture photon spectrum
20-CA-42 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

Energy (MeV) vs. MeV/collision for different particles:
- Protons
- Deuterons
- Tritons
- Alphas
Recoil Heating

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

-0.4 -0.2 0.0 0.2 0.4 0.6 0.8

0 20 40 60 80 100 120 140 160

recoil heating
Particle production cross sections

- Protons
- Deuterons
- Tritons
- Alphas

Energy (MeV) vs. Cross section (barns)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+ protons from (n,x)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
protons from (n,n*)p

![Graph showing the probability of secondary energy as a function of energy in MeV.](image-url)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
protons from (n,p*c)

Diagram: Plot showing the probability in MeV for Sec. Energy vs. Energy (MeV). The y-axis represents the probability in MeV on a log scale from $10^{-3}$ to $10^1$. The x-axis represents energy in MeV ranging from 4 to 20 MeV.
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
tritons from (n,x)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
alphas from (n,x)
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+ alphas from (n,n*)a
20-CA-42 FOR FENDL-3.2 FROM FENDL-3.2 BY NJOY2016.60+
alphas from (n,a*c)