JEFF-3.1 CA-42
Principal cross sections

Energy (MeV) vs. Cross section (barns)

- Total
- Absorption
- Elastic
- Gamma production

Graph shows cross sections as a function of energy, with different energy ranges highlighting various reactions.
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resonance total cross section

Total cross section (barns) vs. Energy (MeV)
JEFF-3.1 CA-42
resonance total cross section

Energy (MeV)

Cross section (barns)
JEFF-3.1 CA-42
resonance total cross section

Cross section (barns) vs. Energy (MeV)
JEFF-3.1 CA-42
resonance total cross section

Cross section (barns)

Energy (MeV)
JEFF-3.1 CA-42
resonance absorption cross sections

Cross section (barns)

Energy (MeV)
JEFF-3.1 CA-42
resonance absorption cross sections

Energy (MeV)

Cross section (barns)

- capture
JEFF-3.1 CA-42
resonance absorption cross sections

Cross section (barns)

Energy (MeV)
JEFF-3.1 CA-42
resonance absorption cross sections

Capture cross section as a function of energy. The cross section decreases significantly with increasing energy, indicating a rapid decrease in the probability of capture as the energy increases.
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Non-threshold reactions
JEFF-3.1 CA-42
Heating

Heating (MeV/reaction)

Energy (MeV)
JEFF-3.1 CA-42
Inelastic levels

![Graph showing inelastic levels with energy (MeV) on the x-axis and cross section (barns) on the y-axis. The graph includes curves labeled (n,n*1), (n,n*2), (n,n*3), (n,n*4), and (n,n*5).]
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Threshold reactions

Energy (MeV)

Cross section (barns)

- (n,he3)
- (n,a)
- (n,2a)
- (n,2p)
- (n,pa)
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Threshold reactions

Energy (MeV)

Cross section (barns)

(n,p*0)
(n,p*1)
(n,p*2)
(n,p*3)
(n,p*4)
JEFF-3.1 CA-42
Threshold reactions

![Graph showing cross sections for different threshold reactions. The x-axis is energy (MeV) ranging from 2 to 20, and the y-axis is cross section (barns) ranging from $10^{-3}$ to 6. The lines represent (n,p*5), (n,p*6), (n,p*7), (n,p*8), and (n,p*9) reactions.]
JEFF-3.1 CA-42
Threshold reactions

Energy (MeV)

Cross section (barns)

(n,p*10)
(n,p*c)
(n,d*0)
(n,d*1)
(n,d*2)
JEFF-3.1 CA-42
Threshold reactions

Energy (MeV)

Cross section (barns)

(n,d*3)
(n,d*4)
(n,d*5)
(n,d*c)
(n,t*0)
JEFF-3.1 CA-42
Threshold reactions

Energy (MeV)

Cross section (barns)

(n,a*2)
(n,a*3)
(n,a*4)
(n,a*5)
(n,a*6)
JEFF-3.1 CA-42
Threshold reactions

Cross section (barns) vs. Energy (MeV)

- (n,a*7)
- (n,a*8)
- (n,a*9)
- (n,a*10)
- (n,a*c)
JEFF-3.1 CA-42
angular distribution for elastic
JEFF-3.1 CA-42
angular distribution for elastic
JEFF-3.1 CA-42
angular distribution for (n,n*1)
JEFF-3.1 CA-42
angular distribution for \((n,n^*2)\)
JEFF-3.1 CA-42
angular distribution for (n,n*3)
JEFF-3.1 CA-42
angular distribution for (n,n*4)
JEFF-3.1 CA-42
angular distribution for (n,n*5)
JEFF-3.1 CA-42
angular distribution for (n,n*6)
JEFF-3.1 CA-42
angular distribution for (n,n*7)
JEFF-3.1 CA-42
angular distribution for (n,n*8)
JEFF-3.1 CA-42
angular distribution for (n,n*9)
JEFF-3.1 CA-42
angular distribution for (n,n*10)
JEFF-3.1 CA-42
angular distribution for (n,n*11)
JEFF-3.1 CA-42
angular distribution for (n,n*12)
JEFF-3.1 CA-42
angular distribution for (n,n*13)
JEFF-3.1 CA-42
angular distribution for (n,n*14)
JEFF-3.1 CA-42
angular distribution for \((n,n^*15)\)
JEFF-3.1 CA-42
angular distribution for (n,n*16)
JEFF-3.1 CA-42
angular distribution for (n,n*17)
JEFF-3.1 CA-42
angular distribution for (n,n*18)
JEFF-3.1 CA-42
angular distribution for (n,n*19)
JEFF-3.1 CA-42
angular distribution for \((n,n'20)\)
JEFF-3.1 CA-42
Neutron emission for (n,x)
JEFF-3.1 CA-42
Neutron emission for (n,2n)
JEFF-3.1 CA-42
Neutron emission for $(n,n^*)a$
JEFF-3.1 CA-42
Neutron emission for (n,n*)p
JEFF-3.1 CA-42
Neutron emission for \((n,n^*)2a\)
JEFF-3.1 CA-42
Neutron emission for (n,n*)d
JEFF-3.1 CA-42
Neutron emission for (n,n*c)
JEFF-3.1 CA-42
Photon emission for (n,x)
JEFF-3.1 CA-42
Photon emission for (n,2n)
JEFF-3.1 CA-42
Photon emission for \((n,n^*)a\)
JEFF-3.1 CA-42
Photon emission for \((n,n^*)p\)
JEFF-3.1 CA-42
Photon emission for (n,n*)2a
JEFF-3.1 CA-42
Photon emission for (n,n*)d
JEFF-3.1 CA-42
Photon emission for (n,n*1)
JEFF-3.1 CA-42
Photon emission for (n,n^*2)
JEFF-3.1 CA-42
Photon emission for \((n,n^*3)\)
JEFF-3.1 CA-42
Photon emission for (n,n*4)
JEFF-3.1 CA-42
Photon emission for (n,n*5)
JEFF-3.1 CA-42
Photon emission for (n,n*6)
JEFF-3.1 CA-42
Photon emission for (n,n*7)
JEFF-3.1 CA-42
Photon emission for (n,n\*8)
JEFF-3.1 CA-42
Photon emission for (n,n*9)
JEFF-3.1 CA-42
Photon emission for (n,n*10)
JEFF-3.1 CA-42
Photon emission for (n,n*11)
JEFF-3.1 CA-42
Photon emission for (n,n*12)
JEFF-3.1 CA-42
Photon emission for \((n,n^{*13})\)
JEFF-3.1 CA-42
Photon emission for (n,n*14)
JEFF-3.1 CA-42
Photon emission for \((n,n^{15})\)
JEFF-3.1 CA-42
Photon emission for (n,n*16)
JEFF-3.1 CA-42
Photon emission for (n,n*17)
JEFF-3.1 CA-42
Photon emission for (n,n*18)
Jeff-3.1 CA-42
Photon emission for (n,n*19)
JEFF-3.1 CA-42
Photon emission for (n,n*20)
JEFF-3.1 CA-42
Photon emission for \((n,\gamma m a)\)
JEFF-3.1 CA-42
Photon emission for (n,2a)
JEFF-3.1 CA-42
Photon emission for (n,2p)
JEFF-3.1 CA-42
Photon emission for (n,pa)
Photon emission for (n,pd)
JEFF-3.1 CA-42
Photon emission for (n,da)
JEFF-3.1 CA-42
Photon emission for (n,p*1)
JEFF-3.1 CA-42
Photon emission for (n,p*2)
JEFF-3.1 CA-42
Photon emission for (n,p*3)
JEFF-3.1 CA-42
Photon emission for \((n,p^*4)\)
JEFF-3.1 CA-42
Photon emission for (n,p*5)
JEFF-3.1 CA-42
Photon emission for (n,p*6)
JEFF-3.1 CA-42
Photon emission for (n,p*7)
JEFF-3.1 CA-42
Photon emission for (n,p*8)
JEFF-3.1 CA-42
Photon emission for \((n,p^*9)\)
JEFF-3.1 CA-42
Photon emission for (n,p*10)
JEFF-3.1 CA-42
Photon emission for (n,p*c)
JEFF-3.1 CA-42
Photon emission for (n,d*1)
JEFF-3.1 CA-42
Photon emission for (n,d*2)
JEFF-3.1 CA-42
Photon emission for (n,d*3)
JEFF-3.1 CA-42
Photon emission for (n,d*4)
JEFF-3.1 CA-42
Photon emission for \((n,d^*5)\)
JEFF-3.1 CA-42
Photon emission for (n,d*c)
JEFF-3.1 CA-42
Photon emission for (n,t*1)
JEFF-3.1 CA-42
Photon emission for (n,t*2)
JEFF-3.1 CA-42
Photon emission for (n,t*3)
JEFF-3.1 CA-42
Photon emission for (n,t*4)
JEFF-3.1 CA-42
Photon emission for (n,t*5)
JEFF-3.1 CA-42
Photon emission for \((n, t^* c)\)
JEFF-3.1 CA-42
Photon emission for (n,he3*1)
JEFF-3.1 CA-42
Photon emission for (n,he3*2)
JEFF-3.1 CA-42
Photon emission for (n,he3*3)
JEFF-3.1 CA-42
Photon emission for (n,he3*4)
JEFF-3.1 CA-42
Photon emission for (n,he3*5)
JEFF-3.1 CA-42
Photon emission for (n,he3*c)
JEFF-3.1 CA-42
Photon emission for \((n,a^*1)\)
JEFF-3.1 CA-42
Photon emission for (n,a*2)
JEFF-3.1 CA-42
Photon emission for (n,a*3)
JEFF-3.1 CA-42
Photon emission for (n,a*4)
JEFF-3.1 CA-42
Photon emission for (n,a*5)
JEFF-3.1 CA-42
Photon emission for (n,a*6)
JEFF-3.1 CA-42
Photon emission for (n,a*7)
JEFF-3.1 CA-42
Photon emission for (n,a*8)
JEFF-3.1 CA-42
Photon emission for (n,a^9)
JEFF-3.1 CA-42
Photon emission for (n,a*10)
JEFF-3.1 CA-42
Photon emission for (n,a*c)
JEFF-3.1 CA-42
thermal capture photon spectrum
JEFF-3.1 CA-42
Recoil Heating

Energy (MeV) vs Heating (MeV/reaction)

- Recoil heating graph
JEFF-3.1 CA-42
Particle production cross sections

Energy (MeV)

Cross section (barns)

- protons
- deuterons
- tritons
- he-3
- alphas
JEFF-3.1 CA-42
protons from (n,x)
JEFF-3.1 CA-42
protons from \((n,n^*)p\)
JEFF-3.1 CA-42
protons from (n,2p)
JEFF-3.1 CA-42
protons from (n,pa)
JEFF-3.1 CA-42
protons from (n,pd)
JEFF-3.1 CA-42
angular distribution for (n,p*0) proton
JEFF-3.1 CA-42
angular distribution for (n,p*1) proton
JEFF-3.1 CA-42
angular distribution for (n,p*2) proton

Energy (MeV)

1.0 0.5 0.0 -0.5 -1.0

Cosine

Prob/Cos

10^0

4 6 8 10 12 14 16 18 20
JEFF-3.1 CA-42
angular distribution for (n,p*3) proton
JEFF-3.1 CA-42
angular distribution for (n,p*4) proton
JEFF-3.1 CA-42
angular distribution for (n,p*5) proton
JEFF-3.1 CA-42
angular distribution for (n,p*6) proton
JEFF-3.1 CA-42
angular distribution for (n,p*7) proton
JEFF-3.1 CA-42
angular distribution for (n,p*8) proton
JEFF-3.1 CA-42
angular distribution for (n,p*9) proton

Prob/Cos

Energy (MeV)

Cosine

1.0 0.5 0.0 -0.5 -1.0

1 4 6 8 10 12 14 16 18 20

10^0
JEFF-3.1 CA-42
angular distribution for (n,p*10) proton
JEFF-3.1 CA-42
protons from (n,p*c)
JEFF-3.1 CA-42
deuterons from (n,x)
JEFF-3.1 CA-42
deuterons from \((n,n^*)d\)
JEFF-3.1 CA-42
deuterons from \( \text{(n,pd)} \)
JEFF-3.1 CA-42
deuterons from (n,da)
JEFF-3.1 CA-42
angular distribution for \((n,d^*0)\) deuteron
JEFF-3.1 CA-42
angular distribution for (n,d*2) deuteron
JEFF-3.1 CA-42
angular distribution for (n,d*3) deuteron
JEFF-3.1 CA-42
angular distribution for (n,d*4) deuteron
JEFF-3.1 CA-42
angular distribution for (n,d*5) deuteron

Energy (MeV)

Prob|Cos

Cosine

1.0 0.5 0.0 -0.5 -1.0
JEFF-3.1 CA-42
deuterons from (n,d*c)
JEFF-3.1 CA-42
angular distribution for (n,t*0) triton
JEFF-3.1 CA-42
angular distribution for \((n,t^*1)\) triton
JEFF-3.1 CA-42
angular distribution for (n,t*2) triton
JEFF-3.1 CA-42
angular distribution for (n,t*4) triton
JEFF-3.1 CA-42
angular distribution for (n,t*5) triton
JEFF-3.1 CA-42
tritons from (n,t*c)
JEFF-3.1 CA-42
angular distribution for (n,he3*0) 3he
JEFF-3.1 CA-42
angular distribution for (n,he3*1) 3he
JEFF-3.1 CA-42
angular distribution for (n,he3*2) 3he
JEFF-3.1 CA-42
angular distribution for (n,he3*3) 3he
JEFF-3.1 CA-42
angular distribution for \((n,he3^*4)\) 3he
JEFF-3.1 CA-42
angular distribution for (n,he3*5) 3he
JEFF-3.1 CA-42
he3s from (n,he3*c)
JEFF-3.1 CA-42
alphas from (n,x)
JEFF-3.1 CA-42
alphas from (n,n*)a
JEFF-3.1 CA-42
alphas from (n,n*)2a
JEFF-3.1 CA-42
alphas from (n,2a)
JEFF-3.1 CA-42
alphas from (n,pa)
JEFF-3.1 CA-42
alphas from (n,da)
JEFF-3.1 CA-42
angular distribution for (n,a*0) alpha
JEFF-3.1 CA-42
angular distribution for (n,a*1) alpha
JEFF-3.1 CA-42
angular distribution for \((n,a^*2)\) alpha
JEFF-3.1 CA-42
angular distribution for (n,a*3) alpha
JEFF-3.1 CA-42
angular distribution for \((n,a^*4)\) alpha

![Graph showing angular distribution for \((n,a^*4)\) alpha]
JEFF-3.1 CA-42
angular distribution for \((n,a^5)\) alpha
JEFF-3.1 CA-42
angular distribution for (n,a*6) alpha
JEFF-3.1 CA-42
angular distribution for \((n,a^7)\) alpha

ProblCos

\(10^0\)

Cosine

1.0 0.5 0.0 -0.5 -1.0

Energy (MeV)

16 18 20

\(E_{\text{nergy}}(\text{MeV})\)
JEFF-3.1 CA-42
angular distribution for (n,a\textsuperscript{8}) alpha
JEFF-3.1 CA-42
angular distribution for (n,a^9) alpha
JEFF-3.1 CA-42
angular distribution for (n,a*10) alpha
JEFF-3.1 CA-42
alphas from $(n,a^c)$