# Feedback to HPRL entry status (as of March 2017)

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<td>Cross section</td>
<td>12 MeV-20 MeV</td>
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<td>Theory/Evaluation • Evaluation works in the framework of the CIELO initiative at LANL [Hale2014], JAEA [Kunieda2014], ORNL, KAPL and others [CSWEG2014]</td>
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<td>3</td>
<td>94-Pu-239(n,f)</td>
<td>Prompt gammas</td>
<td>28 April 2006</td>
<td>Experiments • LANL-LLNL: [Chyzh2014] • Ongoing work at IRMM-IPNO [Oberstedt2015]</td>
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| 5  | 72-Hf-nat(n,g) Cross section | 500 eV-5 keV | 28 April 2006 | *Experiments*  
  - KIT/FZK: [Wisshak2006]  
  - Turkey??: [Budak2011]  
  - KAERI: [Kim2005]  
  - RPI: [Trbovich2009]  
  *Theory/Evaluation*  
  - Serco: [Dean2011]  
  - CEA: [Noguere2009] |        |
| 6  | 92-U-233(n,g) Cross section | 10 keV-1 MeV | 28 April 2006 | *Experiments*  
  - n_TOF: [Carrapiço2013, EXFOR 23071] [Bacak2017] |        |
<p>| 7  | 26-Fe-56(n,xn) Cross section, DDX | 7 MeV-20 MeV | 13 July 2006 | See US feedback form by D. Brown |        |</p>
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| 8  | 1-H-2(n,el) | DDX | 100 keV-1 MeV | 25 July 2006 | Experiments  
- G.J. Weisel, et al., PRC 89 (2014) 054001, Neutron-deuteron analyzing power data at En=22.5 MeV (Of interest to theoretical models for evaluations)  
- Ongoing work at JRC-Geel in collaboration with HZDR, PTB  
Theory/Evaluation  
| 9  | 92-U-233(n,g) | Cross section, nu-bar | Thermal-10 keV | 19 April 2007 | Experiments  
- n_TOF: [Carrapiço2013, EXFOR 23071] [Bacak2017]  
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<td>94-Pu-239(n,f),(n,g) Cross section, eta, alpha</td>
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<td>92-U-235(n,g) Cross section</td>
<td>100 eV-1 MeV</td>
<td>29 August 2007</td>
<td>See US feedback form by F. Tovesson&lt;br&gt;&lt;br&gt;<strong>Experiments</strong>&lt;br&gt;• n_TOF: [Balibrea2014]</td>
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<td>24-Cr-52(n,xd),(n,xt) Cross section</td>
<td>Threshold-65 MeV</td>
<td>23 Oct. 2007</td>
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<td>14</td>
<td>94-Pu-242(n,g),(n,tot) Cross section</td>
<td>0.5 eV-2 keV</td>
<td>6 July 2007</td>
<td>See US feedback form by D. Brown&lt;br&gt;&lt;br&gt;<strong>Experiments</strong>&lt;br&gt;• n_TOF: (n,g) [Lerendegui2016]</td>
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| 15 | 95-Am-241(n,g),(n,tot) Cross section | Thermal | 8 Nov. 2007 | *Experiments*  
  - IRMM: C. Lampoudis et al., EPJ+ 128 (2013) 86, Neutron transmission and capture cross section measurements for 241Am at the GELINA facility  
  - n_TOF: (n,g) [Fraval2014, EXFOR 23237] [Mendoza2014]  
  *Theory/Evaluation*  
  - CEA: G. Noguere et al., PRC 92 (2015) 014607 Partial-wave analysis of n+Am-241 reaction cross sections in the resonance region |        |
<p>| 16 | 95-Am-243(n,f) Prompt neutrons | Thermal-10 MeV | 8 Nov. 2007 |  |
| 17 | 96-Cm-244(n,f) Prompt neutrons | Thermal-10 MeV | 8 Nov. 2007 |  |</p>
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| 18 | 92-U-238(n,\gamma) | 65 keV-20 MeV | 28 Mars 2008       | See US feedback form by D. Brown  
Experiments  
- New experiment done with the prompt spectroscopy gamma method coupled to time of flight measurements @ GELINA (JRC/IRMM). Beam from 2011 to 2013. Analysis in the finalization phase (36 \(n,n'\gamma\) cross sections but also \(n,2n\gamma\) and \(n,3n\gamma\)). The final publication of the results is planned for the end of 2016 or the beginning of 2017 (EXFOR #22795.002)  
Theory/Evaluation  
- A. Santamarina et al., ND2013, Nuclear Data Sheets 118 (2014) 118–121, Improvement of 238U Inelastic Scattering Cross Section for an Accurate Calculation of Large Commercial Reactors  
| 19 | 94-Pu-238(n,f)     | 9 keV-6 MeV  | 31 Mars 2008       | n_TOF: [Belloni2013, EXFOR 23148], new measurement planned in 2018 in EAR2 |        |
| 21 | 95-Am-241(n,f)     | 180 keV-20 MeV | 31 Mars 2008 | Experiments  
- \(n,\gamma\): new measurement planned in 2018 in EAR2 |        |
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<td>25</td>
<td>96-Cm-244(n,f) Cross section</td>
<td>65 keV-6 MeV</td>
<td>4 April 2008</td>
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| 27 | 96-Cm-245(n,f) Cross section | 0.5 keV-6 MeV | 4 April 2008 | Experiments  
- n_TOF: [Calviani2012, EXFOR 23168] | |
| 29 | 11-Na-23(n,inl) Cross section | 0.5 MeV-1.3 MeV | 4 April 2008 | See US feedback form by D. Brown  
Experiments  
- C. Rouki et al. NIM A 672 (2012) 82, High resolution measurement of neutron inelastic scattering cross-sections for 23Na (GELINA).  
Theory/Evaluation  
- CEA: P. Archier et al., NDS 118 (2014) 140, New JEFF-3.2 Sodium Neutron Induced Cross-sections Evaluation for Neutron Fast Reactors Applications: from 0 to 20 MeV | |
<p>| 32 | 94-Pu-239(n,g) Cross section | 0.1 eV-1.35 MeV | 4 April 2008 | See US feedback form by F. Tovesson | |
| 33 | 94-Pu-241(n,g) Cross section | 0.1 eV-1.35 MeV | 4 April 2008 | | |</p>
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| 34 | 26-Fe-56(n,n') Cross section | 800 keV-20 MeV | 4 April 2008 | See US feedback form by D. Brown  
*Experiments*  
- C.M. Castaneda et al., NIM/B 260 (2007) 508, Gamma ray production cross sections from the bombardment of Mg, Al, Si, Ca and Fe with medium energy neutrons; EXFOR 14151 gamma-production cross section first level at six energies.  
- Z. Wang et al., CST 47 (2013) 2177, Study on coincidence measurement for 56Fe(n,xng) reaction cross section; EXFOR 32720; En=14.8 MeV  
- A. Negret et al., PRC 90 (2014) 034602, Cross-section measurements for the 56Fe(n,xng) reactions; EXFOR 23073; Inelastic cross section, level cross sections, gamma-production cross sections; close to target accuracy for the cross section.  
- R. Beyer et al., NPA 927 (2014) 41, Inelastic scattering of fast neutrons from excited states in 56Fe; inelastic cross section, level cross sections, gamma-production cross sections (missing in EXFOR).  
- Y. Danon et al., WONDER2015, EPJConf 111 (2016) 02001, Recent developments in nuclear data measurement capabilities at the Gaerttner LINAC Center at RPI.  
- Ongoing work at University of Kentucky (Vanhoy, Hicks, Yates et al.)  
*Theory/Evaluation*  
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| 36 | 92-U-238(n,g) Cross section | 20 eV-25 keV | 15 Sept. 2008 | See US feedback form by D. Brown  
- H.I. Kim et al. EPJA 52(2016)170 Neutron capture cross section measurements for 238U in the resonance region at GELINA  
- n_TOF: [Mingrone2014][Wright2014]  
- H. Naik et al., Radioanal.Nucl.Chem.303(2015)2497, Neutron induced reaction cross-section of 232Th and 238U at the neutron energies of 2.45 and 14.8 MeV.  
- J.L. Ullmann, et al., Phys. Rev. C 89, 034603 (2014), Cross section and γ-ray spectra for 238U(n, γ) measured with the DANCE detector array at the Los Alamos Neutron Science Center  
- A. Wallner et al., PRL112(2014)192501, Novel Method to Study Neutron Capture of 235U and 238U Simultaneously at keV Energies  
- Q. Ducasse et al., ND2013 NDS119(2014)233 Neutron-induced Cross Sections of Actinides via the Surrogate-reaction Method  
- C. Lampoudis et al. ND2013, NDS119(2014)14 238U Neutron Capture Cross Section Measurements at the GELINA Facility  
- R. Crasta et al., NSE 178(2014) 66, Measurement of the 238U(n, γ)239U and 238U(n, 2n)237U Reaction Cross Sections Using a Neutron Activation Technique at Neutron Energies of 8.04 and 11.90 MeV  
- J. Ullmann et al., ND2010, J.KPS59(2011)1406, Measurement of the 238U Neutron-capture Cross Section and Gamma-emission Spectra from 10 eV to 100 keV Using the DANCE Detector at LANSCE  
- H. Derrien et al., NSE161(2009)131, R-Matrix Analysis of 238U High-Resolution Neutron Transmissions and Capture Cross Sections in the Energy Range 0 to 20 keV  
- A. Carlson et al., ND2007, EDP Sciences, p.1233 (2008), An international neutron cross section standards evaluation  
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| 37 | 94-Pu-240(n,f) | Cross section | 0.5 keV-5 MeV | 15 Sept. 2008 | See US feedback form by F. Tovesson  
*Experiments*  
- n_TOF: [Tsinganis2015]  
- P. Salvador et al., PRC 92 (2015) 014620, Neutron-induced fission cross section of 240Pu from 0.5 MeV to 3 MeV; EXFOR 23281  
- Ongoing work from a JRC-PTB-NPL collaboration and from a CENBG-CEA-JRC collaboration (ANDES and EMRP projects) |        |
*Experiments*  
- n_TOF: [Tsinganis2014]  
- P. Salvador-Castiñeira, PRC 92 (2015) 044606, Neutron-induced fission cross sections of Pu242 from 0.3 MeV to 3 MeV (JRC, VdG); EXFOR 23280.  
- Ongoing work from a JRC-PTB-NPL collaboration [C. Matei et al., PRC 95 (2017) 024606] and from a CENBG-CEA-JRC collaboration (ANDES and EMRP projects) |        |
*Experiments*  
- n_TOF: [Tsinganis2014]  
- P. Salvador-Castiñeira, PRC 92 (2015) 044606, Neutron-induced fission cross sections of Pu242 from 0.3 MeV to 3 MeV (JRC, VdG); EXFOR 23280.  
- Ongoing work from a JRC-PTB-NPL collaboration [C. Matei et al., PRC 95 (2017) 024606] and from a CENBG-CEA-JRC collaboration (ANDES and EMRP projects) |        |
| 40 | 14-Si-28(n,inl) | Cross section | 1.4 MeV-6 MeV | 15 Sept. 2008 | *Experiments*  
- A. Negret et al., PRC 88 (2013) 034604, Cross sections for inelastic scattering of neutrons on 28Si and comparison with the 25Mg(α,n)28Si reaction (GELINA inelastic); EXFOR 23173  
- A. Negret et al., PRC 88 (2014) 027601, Neutron inelastic scattering measurements for background assessment in neutrinoless double β decay experiments (partial data) |        |
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| 41 | 82-Pb-206(n,inl)  | 0.5 MeV-6 MeV | 15 Sept. 2008      | Experiments  
  • V.E. Guiseppe et al., PRC 79 (2009) 054604, Neutron inelastic scattering and reactions in natural Pb as a background in neutrinoless double-β-decay experiments  
  • A. Negret, L.C. Mihailescu et al., PRC 91 (2013) 027601 Cross section measurements for neutron inelastic scattering and the (n, 2n gamma) reaction on 206Pb (overrules all earlier publications by these authors on this subject); EXFOR 23292  
  • M. Kerveno et al., EPJA |        |
| 42 | 82-Pb-207(n,inl)  | 0.5 MeV-6 MeV | 15 Sept. 2008      | Experiments  
  • V.E. Guiseppe et al., PRC 79 (2009) 054604, Neutron inelastic scattering and reactions in natural Pb as a background in neutrinoless double-β-decay experiments  
| 43 | 1-H-1(n,n)        | 10 MeV-20 MeV | 29 April 2011      | See US feedback form by A. Carlson |        |
| 44 | 93-Np-237(n,f)    | 200 keV-20 MeV | 11 May 2015        | Experiments  
  • n_TOF: [Paradela2010] [Diakaki2016], new measurements performed in 2016  
  • Ongoing work at JRC-Geel in collaboration with NPL |        |

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http://dx.doi.org/10.1016/j.nds.2014.08.005

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[Khryachkov2012] V.A. Khryachkov, et al. (G. Giorginis), *(n,a) reaction cross section research at IPPE*, CNR*11, EPJ Web of Conferences 21 (2012) 03005 [http://dx.doi.org/10.1051/epjconf/20122103005](http://dx.doi.org/10.1051/epjconf/20122103005)


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http://dx.doi.org/10.1051/epjconf/20136202003

http://dx.doi.org/10.1140/epja/i2015-15178-8

http://dx.doi.org/10.1103/PhysRevC.82.034601

http://dx.doi.org/10.13182/NSE161-303

http://cds.cern.ch/record/2115357

http://dx.doi.org/10.1016/j.nds.2014.08.018

http://dx.doi.org/10.1103/PhysRevC.73.045807

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