

## Scientific Papers and Publications 2018 – 2020

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### 2020

#### **Ratio of spectral averaged cross sections measured in standard $^{252}\text{Cf}(\text{sf})$ and $^{235}\text{U}(\text{n}_{\text{th}},\text{f})$ neutron fields**

M. Schulc, R. Capote, et al., *EPJ WEb Conf* **239** (2020) 19004.

#### **A reference neutron field for measurement of spectrum averaged cross sections**

M. Kostal, R. Capote, et al., *Ann. Nucl. En.* **140** (2020) 107119.

#### **Results of the Collaborative International Evaluated Library Organisation (CIELO) Project**

M. Fleming, R. Capote, et al., *EPJ WEb Conf.* **239** (2020) 15003.

#### **Upgrade of IAEA recommended data of selected nuclear reactions for production of PET and SPECT isotopes**

A. Hermanne, R. Capote, et al., *ArXiv*

#### **Dispersive optical model description of nucleon scattering on Pb and Bi isotopes**

Xiuniao Zhao, R. Capote, et al., *Phys. Rev. C* **101** (2020) 064618.

#### **Comprehensive validation of silicon cross sections**

T. Czako, R. Capote, et al., *Nucl. Eng. Technol.* **52** (2020) 2717-2724.

#### **Erratum: Nucleon scattering on actinides using a dispersive optical model with extended couplings [Phys. Rev. C **94**, 064605 (2016)]**

E.Sh. Soukhovitski, R. Capote, J.M. Quesada, S. Chiba and D.S. Martyanov, *Phys. Rev. C* **102** (2020) 059901.

#### **Comparison of erosion and deposition in JET divertor during first three ITER-like wall campaigns,**

S. Krat, K. Heinola, et al., *Phys. Scripta* **T171** (2020) 014059.

#### **Improvements to sink strength theory used in multi-scale rate equation simulations of defects in solids**

T. Ahlgren and K. Heinola, *Materials* **13** 2621 (2020)

#### **Effect of surface temperature on fuel retention and structure of Be-containing co-deposited layers**

A. Hakola, K. Heinola, *Phys. Scripta* **T171** (2020) 014038.

#### **Deposition in the tungsten divertor during the 2011-2016 campaigns in JET with ITER-Like Wall**

N. Catarino, A. Widdowson, A. Baron-Wiechec, J. P. Coad, K. Heinola, M. Rubel, N. P. Barradas and E. Alves, *Phys. Scripta* **T171** (2020) 014044.

#### **Fuel inventory and material migration of JET main chamber plasma facing components compared over three operational period**

A. Widdowson, K. Heinola, et al., *Phys. Scripta* **T171** (2020) 014051.

**Hydrogen isotope exchange mechanism in tungsten studied by ERDA**

T. Vuoriheimo, P. Jalkanen, A. Liski, K. Mizohata, T. Ahlgren, K. Heinola and J. Raisanen, *Phys. Scripta* **T171** (2020) 014056.

**Bayesian updating for data adjustments and multi-level uncertainty propagation within Total Monte Carlo**

E. Alhassan, D. Rochman, P. Helgesson, H. Sjostrand, A. Vasiliev, and A.J. Koning, *Ann. Nucl. En.* **139** (2020) 107239.

**A statistical analysis of evaluated neutron resonances with TARES for JEFF-3.3, JENDL-4.0, ENDF/B-VIII.0 and TENDL-2019**

D. Rochman, A.J. Koning, J.-Ch. Sublet, *Nucl. Data Sheets* **163** (2020) 163.

**Evaluation of fission product yields and associated covariance matrices**

K. Tsubakihara, S. Okumura, et al., *Nucl. Sci. Technol.* **58** (2020) pp. 151-165.

**The fission yield calculations with Langevin model, Hauser-Feshbach statistical decay, and beta decay**

S. Okumura, Toshihiko Kawano and Satoshi Chiba, *EPJ Web of Conferences* **239** (2020) 03005.

**Completeness Check of Experimental Fission Product Yield Data in EXFOR Database**

S. Okumura, *EPJ Web of Conferences* **242** (2020) 02002.

**Excitation function of  $^{nat}\text{Cu}({}^3\text{He},x){}^{65}\text{Zn}$  nuclear reaction for  ${}^3\text{He}$  beam monitoring purpose**

M.U. Khandaker, K. Nagatsu, H. Obata, K. Minegishi, M.R. Zhang, S.K.I. Ali, N. Otuka, *EPJ Web Conf.* **230** (2020) 20009.

**Covariance analysis on the thermal neutron capture cross sections using an Am-Be neutron source**

P. Panikkath, N. Otuka, P. Mohanakrishnan, *EPJ Web Conf.* **239** (2020) 01027.

**Excitation functions of deuteron-induced nuclear reactions on erbium in the energy range of 4-24 MeV**

M.U. Khandaker, H. Haba, Y. Komori, N. Otuka, *Nucl. Instrum. Meth. B* **470** (2020) pp. 1-9.

**Production cross sections of thulium radioisotopes for alpha-particle induced reactions on holmium**

A.R. Usman, M.U. Khandaker, H. Haba, N. Otuka, M. Murakami, *Nucl. Instrum. Meth. B* **368** (2020) pp. 112-119.

**How to search on EXFOR**

N. Otuka, N. Soppera, *J. Phys. Conf. Ser.* **1555** (2020) 012009

**Progress in international collaboration on EXFOR library**

N. Otuka, B. Pritychenko, M. Fleming, Y. Jin, G. Pikulina, R. Suzuki, V. Devi, M. Mikhailiukova, S. Okumura, N. Soppera, T. Tada, S. Takács, S. Taova, V.V. Varlamov, J.M. Wang, S.C. Yang, V. Zerkin, *EPJ Web Conf.* **239** (2020) 15001.

**Conception and software implementation of a nuclear data pipeline (preprint)**

G. Schnabel, et al., (2020).

**Data assimilation of post-irradiation examination data for fission yields from GEF**

D. Siefman, G. Schnabel, et al., *EPJ Nuclear Sci. Technol.* **6** (2020) 52.

**Strangeness production in the new version of the Liège Intra-Nuclear Cascade model**

J. Hirtz, G. Schnabel, et al., *Phys. Rev. C* **101** (2020) 014608.

**Production of Hypernuclei and Strange Particles in Spallation Reactions at a Few GeV Using an Intranuclear Cascade Approach**

J.-C. David, G. Schnabel, et al., Proc. Int. Conf. Few-Body Problems in Physics, *Recent Progress in Few-Body Physics* **FB22 2018** (2020) pp. 959-963.

**Unrecognized Sources of Uncertainties (USU) in Experimental Nuclear Data**

R. Capote, G. Schnabel, A.D. Carlson, et al., *Nucl. Data Sheets* **163** (2020) pp.191-227.

**Completeness of neutron-, photo-induced and spontaneous fission yields data**

B. Pritychenko, O. Schwerer, J. Totans, V. Zerkin and O. Gritzay,  
EPJ Web of Conferences **239**, 09003 (2020), DOI: [10.1051/epjconf/202023909003](https://doi.org/10.1051/epjconf/202023909003)

**2019**

**IRDF-II: A New Neutron Metrology Library**

A. Trkov, R. Capote, et al., *Nucl. Data Sheets* **163** (2019) 1-108.

**${}^7\text{Li}(p, n){}^7\text{Be}$  cross section from threshold to 1960 keV and precise measurement of the  ${}^{197}\text{Au}(n, \gamma)$  spectrum-averaged cross section at 30 keV**

G. Martin-Hernandez, P. Mastinu, E. Musacchio Gonzalez, R. Capote, H. Lubin, and M. Macias, *Phys. Rev. C* **99** (2019) 034616.

**Quasiparticle nature of excited states in random-phase approximation**

E.V. Chimanski, B.V. Carlson, R. Capote, and A.J. Koning, *Phys. Rev. C* **99** (2019) 014305.

**${}^7\text{Li}(p, n){}^7\text{Be}$  cross section from threshold to 1960 keV and precise measurement of the  ${}^{197}\text{Au}(n, \gamma)$  spectrum-averaged cross section at 30 keV**

R. Capote, et al., *Phys. Rev. C* **99** (2019) 034616.

**Analysis of neutron bound states of  ${}^{208}\text{Pb}$  by a dispersive optical model potential**

R. Capote, et al., *J. Phys. G: Nucl. Part. Phys.* **46** (2019) 055103.

**Recommended nuclear data for medical radioisotope production: diagnostic gamma emitters**

F.T. Tarkanyi, R. Capote, et al., *J. Radioanal. Nucl. Chem.* **319** (2019) 487-531.

**Recommended nuclear data for medical radioisotope production: diagnostic positron emitters**

F.T. Tarkanyi, R. Capote, et al., *J. Radioanal. Nucl. Chem.* **319** (2019) 533-666.

**Recommended Nuclear Data for the Production of Selected Therapeutic Radionuclides**

J.W. Engle, R. Capote, et al., *Nucl. Data Sheets* **155** (2019) 56-74.

**A reference neutron field for measurement of spectrum averaged cross sections**

R. Capote, et al., *Ann. Nucl. Energy* (2019) 107119.

### **Recommended Nuclear Data for the Production of Selected Therapeutic Radionuclides**

R. Capote, et al., *Nucl. Data Sheets* **155** (2019) 56-74.

### **Deposition of impurity metals during campaigns with the JET ITER-Like Wall**

A. Widdowson, K. Heinola, et al., *Nucl. Mat. Energy* **19** (2019) 218.

### **Investigation of deuterium trapping and release in the JET divertor during the third ILW campaign using TDS**

J. Likonen, K. Heinola, A. De Backer, A. Baron-Wiechec, N. Catarino, I. Jepu, C.F. Ayres, P. Coad, G.F. Matthews and A. Widdowson, *Nucl. Mat. Energy* **19** (2019) 300.

### **Modelling of the effect of ELMs on fuel recycling at the bulk W divertor target of JET**

K. Heinola, T. Ahlgren, S. Brezinsek, T. Vuoriheimo, S. Wiesen, *Nucl. Mat. Energy* **19** (2019) 397.

### **Erosion, screening, and migration of Tungsten in the JET divertor**

S. Brezinsek, K. Heinola, et al., *Nucl. Fusion* **59** (2019) 096035.

### **Ion beam analysis of fusion plasma-facing materials and components**

M. Mayer, K. Heinola, et al., *Nucl. Fusion* **60** (2019) 025001.

### **TENDL: Complete Nuclear Data Library for innovative Nuclear Science and Technology**

A.J. Koning, D. Rochman, J.-Ch. Sublet, N. Dzysiuk, M. Fleming, and S. van der Marck, *Nucl. Data Sheets* **155** (2019) 1.

### **The gamma-ray strength function for Thallium isotopes relevant to the $^{205}\text{Pb}$ - $^{205}\text{Tl}$ chronometry**

H. Utsunomiya, T. Renstroem, G.M. Tveten, S. Goriely, T. Ari-Izumi, D. Filipescu, J. Kaur, W. Luo, S. Miyamoto, T. Glodariu, Y.-W. Lui, S. Miyamoto, A-C. Larsen, S. Hilaire, S. Peru, and A.J. Koning, *Phys. Rev. C* **99** (2019) 024609.

### **Correlation nubar-sigma for U-Pu in the thermal and resonance neutron range via integral information**

D. Rochman, A. Vasiliev, H. Ferroukhi, S. Pelloni, E. Bauge, and A.J. Koning, *Eur. Phys. J. Plus* **134** (2019) 453.

### **Gamma-ray strength function for Barium isotopes**

H. Utsunomiya, T. Renstroem, G.M. Tveten, S. Goriely, T. Ari-Izumi, V.W. Ingeberg, B.V. Kheswa, Y.-W. Lui, S. Miyamoto, S. Hilaire, S. Peru, and A.J. Koning, *Phys. Rev. C* **100** (2019) 034605.

### **Our future nuclear data needs**

L.A. Bernstein, D.A. Brown, A.J. Koning, B.T. Rearden, C.E. Romano, A.A. Sonzogni, A.S. Voyles and W. Younes, *Annu. Rev. Nucl. Part. Sci.* **69** (2019) 1-21.

### **Compilation of experimental nuclear reaction data measured in Kazakhstan and Uzbekistan for the EXFOR Library**

N. Kenzhebeyev, T.K. Zholdybayev, F.Kh. Ergashev, N. Otuka, *Bull. Russ. Acad. Sci. Ser. Phys.* **83** (2019) 1429-1432.

### **Measurement of thermal neutron capture cross section of $^{71}\text{Ga}$ with dual monitor foils and covariance analysis**

P. Panikkath, N. Otuka, Y. Iwamoto and P. Mohanakrishnan, *Eur. Phys. J. A* **55** (2019) 91.

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### **Evaluation of neutron reactions on iron isotopes for CIELO and ENDF/B-VIII.0**

M. Herman, A. Trkov, R. Capote, G.P.A. Nobre, D.A. Brown, R. Arcilla, Y. Danon, A. Plompen, S.F. Mughabghab, Q. Jing, Ge Zhigang, Liu Tingjin, Lu Hanlin, Ruo Xichao, L. Leal, B.V. Carlson, T. Kawano, M. Sin, S.P. Simakov, K. Guber, *Nucl. Data Sheets* **148** (2018) 214-253.

### **Template for estimating uncertainties of measured neutron-induced fission cross-sections**

D. Neudecker, B. Hejnal, F. Tovesson, M.C. White, D.L. Smith, D. Vaughan and R. Capote, *EPJ Nucl. Sci. Technol.* **4** (2018) 21.

### **Assessment of Novel Techniques for Nuclear Data Evaluation**

P. Helgesson, D. Neudecker, H. Sjostrand, M. Grosskopf, D.L. Smith and R. Capote, Reactor Dosimetry: 16th International Symposium, *ASTM STP1608* (2018) 105-116.

### **Predicting Spectrum Averaged Cross Sections in Prompt Fission Neutron Fields**

R. Capote and A. Trkov, Reactor Dosimetry: 16th International Symposium, *ASTM STP1608* (2018) 117-123.

### **CIELO Collaboration Summary Results: International Evaluations of Neutron Reactions on Uranium, Plutonium, Iron, Oxygen and Hydrogen**

M.B. Chadwick, R. Capote, A. Trkov, M.W. Herman, D.A. Brown, G.M. Hale, A.C. Kahler, P. Talou, A.J. Plompen, P. Schillebeeckx, M.T. Pigni, L. Leal, Y. Danon, A.D. Carlson, P. Romain, B. Morillon, E. Bauge, F.-J. Hamsch, S. Kopecky, G. Giorginis, T. Kawano, J. Lestone, D. Neudecker, M. Rising, M. Paris, G.P.A. Nobre, R. Arcilla, O. Cabellos, I. Hill, E. Dupont, A.J. Koning, D. Cano-Ott, E. Mendoza, J. Balibrea, C. Paradela, I. Duran, J. Qian, Z. Ge, T. Liu, L. Hanlin, X. Ruan, W. Haicheng, M. Sin, G. Noguere, D. Bernard, R.J. acqmin, O. Bouland, C. De Saint Jean, V.G. Pronyaev, A.V. Ignatyuk, K. Yokoyama, M. Ishikawa, T. Fukahori, N. Iwamoto, O. Iwamoto, S. Kunieda, C.R. Lubitz, M. Salvatores, G. Palmiotti, I. Kodeli, B. Kiedrowski, D. Roubtsov, I. Thompson, S. Quaglioni, H.I. Kim, Y.O. Lee, U. Fischer, S. Simakov, M. Dunn, K. Guber, J.I. Marquez Damian, F. Cantargi, I. Sirakov, N. Otuka, A. Daskalakis, B.J. McDermott, S.C. Van Der Marck, *Nucl. Data Sheets*. **148** (2018) 189-213.

### **Results of a New Evaluation of the Neutron Standards**

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### **ENDF/B-VIII.0 : The 8th major release of the nuclear reaction data library with CIELO-project cross sections, new standards and thermal scattering data**

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### **Evaluation of the neutron data standards**

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### **How inelastic scattering stimulates nonlinear reactor core parameter behaviour**

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**Monte Carlo nuclear data adjustment via integral information**

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S.P. Simakov, U. Fischer, A.J. Koning, A.Yu. Konobeyev, D.A. Rochman, *Nucl. Mat. En.* **15** (2018) 244-248.

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**Energy dependence of the neutron capture cross section on  $^{70}\text{Zn}$  near the inelastic scattering threshold**

R. Pachuau, B. Lalremruata, N. Otuka, S.V. Suryanarayana, L.R.M. Punte, L.R. Hlondo, V.V. Desai, B. Satheesh, S. Kailas, S. Ganesan, B.K. Nayak, A. Saxena, *Phys. Rev. C* **97** (2018) 064617

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N. Otuka, B. Lalremruata, M.U. Khandaker, A.R. Usman, L.R.M. Punte, *Radiat. Phys. Chem.* **149** (2018) 151.

**Rod insertion method analysis - a methodology update and comparison to boron dilution method**

V. Merljak, M. Kromar, A. Trkov, *Ann. Nucl. En.* **113** (2018) 96-104.

**The experimental nuclear reaction data (EXFOR): Extended computer database and Web retrieval system**

V. Zerkin, B. Pritychenko, *Nucl. Instrum. Meth. A* **888** (2018) 31-43.