


PERSONAL INFORMATION **Catalin MATEI**

 IFIN-HH / ELI-NP
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Sex M | Date of birth 09/10/1976 | Nationality Romania

WORK
EXPERIENCE

- 11/2014-present **Junior/Senior Scientist**
IFIN-HH / ELI-NP, Magurele, Romania
- Experimental nuclear physics, Design and development of γ -ray beam diagnostics instruments, neutron and γ -ray detectors
 - Experimental nuclear astrophysics, development of the ELISSA silicon array, development of the experimental program in charged particle detection
- 10/2012-9/2014 **Higher Research Scientist**
National Physical Laboratory, Teddington, UK
- Neutron physics & standards, Project manager for the thermal neutron facility, Coordinating irradiations for calibration and testing of reactor instruments, development of radiation measuring instruments
- 10/2009-10/2012 **Post-doctoral Fellow**
European Commission, Joint Research Centre – Geel, Belgium
- Experimental neutron physics, Development of experimental setup and data analysis for measurements of prompt neutron emission multiplicity in the fission of ^{252}Cf .
 - Novel neutron detectors testing & characterisation, MCNPX simulations
- 10/2006-08/2009 **Post-doctoral Fellow**
Oak Ridge National Laboratory, Oak Ridge, TN, USA
- Experimental neutron physics, development of the VANDLE neutron detector array, Managed the purchasing, testing and design of various components of the array, coordinated neutron measurement campaigns at various research facilities.
 - Experimental nuclear astrophysics with charged particle arrays (SIDAR, ORRUBA)
- 09/2001-09/2006 **Graduate Research Assistant**
Ohio University, Athens, OH, USA
- Experimental nuclear astrophysics, performed and analyzed nuclear physics experiments at Edwards Tandem Accelerator, OhioU and TRIUMF, Canada

EDUCATION
AND TRAINING

- 2001-2006 **PhD Physics**
Ohio University, Athens, OH, USA
- Thesis: Nucleosynthesis of ^{16}O under Quiescent Helium Burning
- 1995-2000 **Dipl. Eng. Applied Nuclear Physics**
University of Bucharest, Bucharest, Romania

PERSONAL SKILLS

Mother tongue(s) Romanian

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	Proficient user	Proficient user	Proficient user	Proficient user	Proficient user
French	Independent user	Independent user	Independent user	Independent user	Independent user

Organisational / managerial skills

- 2020-present **Department Head – Gamma System Department**
IFIN-HH / ELI-NP, Magurele, Romania
- 2016-2020 **Deputy Department Head – Gamma Driven Experiments Department**
IFIN-HH / ELI-NP, Magurele, Romania
- 2012-2014 **Coordinator - Thermal Neutron Facility**
National Physical Laboratory, Teddington, UK

ADDITIONAL INFORMATION

Honours and awards Horia Hulubei Award for Physics of the Romanian Academy for 2018

Projects (selected)

"Expanding Big Bang and p-process nucleosynthesis understanding by using gamma-ray beams", PN-III-P4-PCE-2021-1014, 2022 – awarded €235000

"Towards accurate cross section measurements by developing new methods for characterisation of the γ -ray beam at ELI-NP", PN III: P5/Subprogram 5.1/ELI-RO, 2020 – awarded €145000

$7\text{Li}(g, t)4\text{He}$ below 6 MeV, High Intensity Gamma Source, USA, approved by PAC 2019

Measurement of the photo-fission cross section for U-238 between 8 and 16 MeV, Helmholtz-Zentrum Dresden-Rossendorf, approved by PAC 2018

$7\text{Li}(g, t)4\text{He}$ above 4 MeV, High Intensity Gamma Source, USA, approved by PAC 2016

Portable fast-neutron spectrometer, National Measurement Office, UK, 2013 – awarded £211000

Invited Presentations (selected)

"Nuclear Astrophysics with Gamma Beams at ELI-NP", C2R2 Seminar, South Korea, February 24th, 2022

Mono-energetic γ -ray facilities and nuclear astrophysics, International Research Network for Nuclear Astrophysics (IReNA) Virtual Workshop on stellar burning, June 24th, 2020

The Path to Accurate Measurements with Gamma Beams, Nuclear Physics in Stellar Explosions 2018, Debrecen, Hungary, 13th September 2018

Nuclear Astrophysics with Gamma Beams at ELI-NP, 9th European Summer School on Experimental Nuclear Astrophysics, Santa Tecla, Italy, 20th September 2017

Gamma Beam Diagnostics and Experiments at ELI-NP, NIF Group Seminar, Nuclear and Chemistry Division, Lawrence Livermore National Laboratory, Livermore, CA, 25th October 2016

How to Prepare an Experiment using the Gamma Beam System at ELI-NP, Carpathian Summer School of Physics 2016, Sinaia, Romania, 1st July 2016

Nuclear Astrophysics Measurements with ELISSA at ELI-NP”, Nuclear Physics Group Seminar, University of York, York, United Kingdom, 8th March 2016

Stellar Helium Burning: Precision Nuclear Astrophysics?, Nuclear Astrophysics Workshop, Sungkyunkwan University, Suwon, South Korea, October 2013

R-matrix analysis of the $^{12}\text{C}(\alpha, \text{g})^{16}\text{O}$ reaction, Nuclear Physics Group Seminar, University of Tennessee, Knoxville, TN, February 2009

VANDLE - Neutron Detector Array for Nuclear Reactions and Decay Studies”, Stewardship Science Workshop, Lawrence Livermore National Laboratory, Livermore, CA, October 2008

ADDITIONAL INFORMATION

- Publications (selected)**
- Feasibility of studying astrophysically important charged-particle emission with the variable energy gamma-ray system at the Extreme Light Infrastructure–Nuclear Physics facility, H. Y. Lan, W. Luo, Y. Xu, D. L. Balabanski, G. L. Guardo, M. La Cognata, D. Lattuada, **C. Matei**, R. G. Pizzone, T. Rauscher, J. L. Zhou, **Phys. Rev. C** **105**, **044618 (2022)**
- ELIGANT-GN — ELI Gamma Above Neutron Threshold: The Gamma-Neutron setup, P-A Söderström, E Açiksöz, DL Balabanski, F Camera, L Capponi, Gh Ciocan, M Cuciuc, DM Filipescu, I Gheorghe, T Glodariu, J Kaur, M Krzysiek, **C. Matei**, T Roman, A Rotaru, AB Șerban, A State, H Utsunomiya, V Vasilca, **Nucl. Instr. Meth. A****1027**, **166171 (2022)**
- The Status and Future of Direct Nuclear Reaction Measurements for Stellar Burning, M. Aliotta, R. Buompane, M. Couder, A. Couture, R.J. deBoer, A. Formicola, L. Gialanella, J. Glorius, G. Imbriani, M. Junker, C. Langer, A. Lennarz, Y. Litvinov, W.-P. Liu, M. Lugaro, **C. Matei**, Z. Meisel, L. Piersanti, R. Reifarh, D. Robertson, A. Simon, O. Straniero, A. Tumino, M. Wiescher, Y. Xu, **J. Phys. G: Nucl. Part. Phys.** **49 (1)** **010501 (2021)**
- Characterization of a plutonium-beryllium neutron source, P-A Söderström, **C. Matei**, L. Capponi, E. Açiksöz, D.L. Balabanski, I.-O. Mitu, **Applied Radiation and Isotopes** **167**, **109441 (2021)**
- Electromagnetic character of the competitive $\gamma\gamma/\gamma$ -decay from $^{137\text{m}}\text{Ba}$, P-A Söderström, L. Capponi, E. Açiksöz, T. Otsuka, N. Tsoneva, Y. Tsunoda, D.L. Balabanski, N. Pietralla, G.L. Guardo, D. Lattuada, H. Lenske, **C. Matei**, D. Nichita, A. Pappalardo, T. Petruse, **Nature Communications** **11**, **3242 (2020)**
- Measurement of the $^7\text{Li}(\gamma, t)^4\text{He}$ ground-state cross section between $E_\gamma = 4.4$ and 10 MeV, M. Munch, **C. Matei**, S.D. Pain, M.T. Febraro, K.A. Chipps, H.J. Karwowski, C.Aa. Diget, A. Pappalardo, S. Chesnevskaia, G.L. Guardo, D. Walter, D.L. Balabanski, F.D. Becchetti, C.R. Brune, K.Y. Chae, J. Frost-Schenk, M.J. Kim, M.S. Kwag, M. La Cognata, D. Lattuada, R.G. Pizzone, G.G. Rapisarda, G.V. Turturica, C.A. Ur, and Y. Xu, **Phys. Rev. C** **101**, **055801 (2020)**
- Unfolding of sparse high-energy γ -ray spectra from LaBr₃:Ce detectors, P-A. Söderström, L. Capponi, V. Iancu, D. Lattuada, A. Pappalardo, G.V. Turturica, E. Açiksöz, D.L. Balabanski, P. Constantin, G.L. Guardo, M. Ilie, S. Ilie, **C. Matei**, D. Nichita, T. Petruse, and A. Spataru, **J. Instr.** **14**, **T11007 (2019)**
- Investigation of Compton Scattering for Gamma Beam Intensity Measurements and Perspectives at ELI-NP, G.V. Turturica, **C. Matei**, A. Pappalardo, D.L. Balabanski, S. Chesnevskaia, V. Iancu, C.A. Ur, H.J. Karwowski, K.A. Chipps, M.T. Febraro, S.D. Pain, D. Walter, C.Aa. Diget, J. Frost-Schenk, M. Munch, G.L. Guardo, M. La Cognata, R.G. Pizzone, G.G. Rapisarda, K.Y. Chae, M.J. Kim, M.S. Kwag, **Nucl. Instr. Meth. A****921**, **27 (2019)**

Extreme Light Infrastructure - Nuclear Physics pillar (ELI-NP): new horizons in physics with high power lasers and brilliant gamma beams, S. Gales, K.A. Tanaka, D.L. Balabanski, F. Negoita, D. Stutman, O. Tesileanu, C.A. Ur, D. Ursescu, S. Ataman, M.O. Cernaianu, I. Dancus, B. Diaconescu, N. Djourelou, **C. Matei**, K. Seto, L. D'Alessi, M. Zeng, N. V. Zamfir, **Reports of Progress in Physics 81 (9) 094301 (2018)**

Performance Studies of X3 Silicon Detectors for the Future ELISSA Array at ELI-NP, S. Chesnevskaya, D.L. Balabanski, D. Choudhury, P. Constantin, D.M. Filipescu, D.G. Ghita, G.L. Guardo, D. Lattuada, **C. Matei**, A. Rotaru, A. State, **J. Instr. 13, T05006 (2018)**

First spin-parity constraint of the 306 keV resonance in ^{35}Cl for nova nucleosynthesis, K.A. Chippis, S.D. Pain, R.L. Kozub, D.W. Bardayan, J.A. Cizewski, K.Y. Chae, J.F. Liang, **C. Matei**, B.H. Moazen, C.D. Nesaraja, P.D. O'Malley, W.A. Peters, S.T. Pittman, K.T. Schmitt, and M.S. Smith, **Phys. Rev. C 95, 045808 (2017)**

Absolute cross section measurements of neutron-induced fission of ^{242}Pu from 1 to 2.5 MeV, **C. Matei**, F. Belloni, J. Heyse, A.J.M. Plompen, D.J. Thomas, **Phys. Rev. C 95, 024606 (2017)**

Performance of the Versatile Array of Neutron Detectors at Low Energy (VANDLE), W.A. Peters, S. Ilyushkin, M. Madurga, **C. Matei**, R.K. Grzywacz, D.W. Bardayan, C.R. Brune, Z. Bergstrom, J. Blackmon, J.A. Cizewski, P. Copp, M.E. Howard, R. Ikeyama, R.L. Kozub, B. Manning, T.N. Massey, M. Matos, P.D. O'Malley, F. Raiola, C. S. Reingold, F. Sarazin, I. Spassova, S. Taylor, D. Walter, **Nucl. Instr. Meth. A836, 122 (2016)**

Investigation of the $d(g,n)p$ reaction for gamma beam monitoring at ELI-NP, **C. Matei**, J.M. Mueller, M.H. Sikora, G. Suliman, C.A. Ur, H.R. Weller, **J. Instr. 11, P05025 (2016)**

Constraint of the astrophysical $^{26}\text{Al}(p,g)^{27}\text{Si}$ destruction rate at stellar temperatures, S.D. Pain, D.W. Bardayan, J.C. Blackmon, S.M. Brown, K.Y. Chae, K.A. Chippis, J.A. Cizewski, K.L. Jones, R.L. Kozub, J. F. Liang, **C. Matei**, M. Matos, B.H. Moazen, C.D. Nesaraja, J. Okolowicz, P.D. O'Malley, W.A. Peters, S.T. Pittman, M. Ploszajczak, K.T. Schmitt, J.F. Shriner, D. Shapira, M.S. Smith, D.W. Stracener, and G.L. Wilson, **Phys. Rev. Lett. 114, 212501 (2015)**

Proton light output function and neutron efficiency of a p-terphenyl detector using a ^{252}Cf source, **C. Matei**, F.-J. Hamsch, and S. Oberstedt, **Nucl. Instr. Meth. A676, 135 (2012)**

Neutron single particle structure in ^{131}Sn and direct neutron capture cross sections, R.L. Kozub, G. Arbanas, A.S. Adekola, D.W. Bardayan, J.C. Blackmon, K.Y. Chae, K.A. Chippis, J.A. Cizewski, L. Erikson, R. Hatarik, W.R. Hix, K.L. Jones, W. Krolas, J.F. Liang, Z. Ma, **C. Matei**, B.H. Moazen, C.D. Nesaraja, S.D. Pain, D. Shapira, J.F. Shriner, M.S. Smith, T.P. Swan, **Phys. Rev. Lett. 109, 172501 (2012)**

Halo nucleus ^{11}Be : A spectroscopic study via neutron transfer", K.T. Schmitt, K.L. Jones, A. Bey, S.H. Ahn, D.W. Bardayan, J.C. Blackmon, S.M. Brown, K.Y. Chae, K.A. Chippis, J.A. Cizewski, K.I. Hahn, J.J. Kolata, R.L. Kozub, J.F. Liang, **C. Matei**, M. Matoš, D. Matyas, B.H. Moazen, C. Nesaraja, F.M. Nunes, P.D. O'Malley, S.D. Pain, W.A. Peters, S.T. Pittman, A. Roberts, D. Shapira, J.F. Shriner, M.S. Smith, I. Spassova, D.W. Stracener, A.N. Villano, G.L. Wilson, **Phys. Rev. Lett. 108, 192701 (2012)**

First Direct Measurement of the $^{17}\text{F}(p,g)^{18}\text{Ne}$ Cross Section", K.A. Chippis, D.W. Bardayan, J.C. Blackmon, K.Y. Chae, U. Greife, R. Hatarik, R.L. Kozub, **C. Matei**, B.H. Moazen, C.D. Nesaraja, S.D. Pain, W.A. Peters, S.T. Pittman, J.F. Shriner, Jr., and M.S. Smith, **Phys. Rev. Lett. 102, 152502 (2009)**

Measurement of Branching Ratios from the 7.12-MeV State in ^{16}O and the $^{12}\text{C}(a,g)^{16}\text{O}$ Reaction Cross Section, **C. Matei****, C.R. Brune, and T.N. Massey, **Phys. Rev. C 78, 065801 (2008)**

Measurement of the cascade transition via the first excited state of ^{16}O in the $^{12}\text{C}(a,g)^{16}\text{O}$ reaction, and its S factor in stellar helium burning, **C. Matei****, L. Buchmann, W.R. Hannes, D.A. Hutcheon, C. Ruiz, C. R. Brune, J. Caggiano, A.A. Chen, J. D'Auria, A. Laird, M. Lamey, Z.H. Li, W.P. Liu, A. Olin, D. Ottewell, J. Pearson, G. Ruprecht, M. Trinczek, C. Vockenhuber, and C. Wrede, **Phys. Rev. Lett. 97, 242503 (2006)**