

PERSONAL INFORMATION **Catalin MATEI**


**IFIN-HH / ELI-NP**  
 30 Reactorului Street, Magurele, 077125, Romania

 WORK  
EXPERIENCE
 

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- 03/2020-present **Head of Gamma System Department**  
 IFIN-HH / ELI-NP, Magurele, Romania
- Coordinated the activities for VEGA System contract implementation, ensuring proper communications with key stakeholders, establishing staff recruitment and training strategy, discussing staff objectives and evaluations
- 11/2014-present **Junior/Senior Scientist**  
 IFIN-HH / ELI-NP, Magurele, Romania
- Experimental nuclear physics: Design and development of  $\gamma$ -ray beam diagnostics instruments, neutron and  $\gamma$ -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 for nuclear power and dosimetry customers, 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  $^{252}\text{Cf}$ . 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: Proposed and carried out experiments with stable and radioactive beams using silicon strip detector arrays (ORRUBA, SIDAR).
- 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, Ohio U and TRIUMF, Canada

 EDUCATION  
AND TRAINING
 

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- 2022-2023 **Habilitation in Physics**  
 University Politehnica Bucharest, Bucharest, Romania
- 2001-2006 **PhD Physics**  
 Ohio University, Athens, OH, USA
- 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

## Organisational / managerial skills

- 2023-present **PhD Coordinator – Doctoral School of Engineering and Applications of Lasers and Accelerators (SDEALA)**  
University Politehnica Bucharest, Bucharest, Romania
- 2020-present **Department Head – Gamma System Department**  
IFIN-HH / ELI-NP, Magurele, Romania
- 2016-2020 **Deputy Department Head – Gamma Experiments Driven Department**  
IFIN-HH / ELI-NP, Magurele, Romania
- 2012-2014 **Coordinator - Thermal Neutron Facility**  
National Physical Laboratory, Teddington, UK

## ADDITIONAL INFORMATION

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

Projects (selected)

“Nuclear photonics with radiation sources at ELI-NP”, 10 M€ funding grant (2023-2026) under Program NUCLEU PN-23-21-01-06, from the Romanian Ministry of Research (Project Director: leading the project submission, planning, and coordination)

“Expanding Big Bang and p-process nucleosynthesis understanding by using gamma-ray beams”, PN-III-P4-PCE-2021-1014, 2022 – awarded €235000 (Project Director)

Towards accurate cross section measurements by developing new methods for characterisation of the  $\gamma$ -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

Neutron detectors testing and characterization for gamma beam monitoring and experiments at ELI-NP, European Commission – Joint Research Centre, Institute for Reference Materials and Measurements, Belgium, approved and funded by PAC 2015

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

ADDITIONAL  
INFORMATION
 

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- Publications  
(selected)
- Photonuclear reactions with charged particle emission for nuclear astrophysics studies, C.R. Brune, **C. Matei\*\***, S.D. Pain, R. Smith, **Eur. Phys. J. A 59, (2023) 165**
- Neutron induced fission cross section measurements of  $^{240}\text{Pu}$  and  $^{242}\text{Pu}$  relative to the neutron–proton scattering cross section at 2.5 and 14.8 MeV, F. Belloni, R. Eykens, J. Heyse, **C. Matei**, A. Moens, R. Nolte, A. J. M. Plompen, S. Richter, G. Sibbens, D. Vanleeuw and R. Wynants. **Eur. Phys. J. A 58 (2022) 227**
- 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)**
- Electromagnetic character of the competitive  $\gamma\gamma/\gamma$ -decay from  $^{137\text{m}}\text{Ba}$ , P-A Söderström, L. Capponi, E. Açıkşöz, 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. Petrusse, **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)**
- 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, 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. A921, 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. Cernianu, I. Dancus, B. Diaconescu, N. Djourelov, **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. Chesnevskaia, D.L. Balabanski, D. Choudhury, P. Constantin, D. Filipescu, D.G. Ghita, G.L. Guardo, D. Lattuada, **C. Matei**, A. Rotaru, A. State, **J. Instr. 13, T05006 (2018)**
- Absolute cross section measurements of neutron-induced fission of  $^{242}\text{Pu}$  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, J. Blackmon, J.A. Cizewski, R.L. Kozub, T.N. Massey, M. Matos, P.D. O'Malley, F. Raiola, F. Sarazin, **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)**
- Gamma beam delivery and diagnostics at ELI-NP, H.R. Weller, C.A. Ur, **C. Matei**, J.M. Mueller, M.H. Sikora, G. Suliman, V. Iancu, Z. Yasin, **Rom. Rep. Phys. 68, S447 (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, K.Y. Chae, K.A. Chipps, J.A. Cizewski, K.L. Jones, R.L. Kozub, J. F. Liang, **C. Matei**, M. Matos, B.H. Moazen, C.D. Nesaraja, P.D. O'Malley, W.A. Peters, M.S. Smith, D.W. Stracener, **Phys. Rev. Lett. 114, 212501 (2015)**

<b>Invited Presentations (selected)</b>	<p>Nuclear Astrophysics with Gamma Beams at ELI-NP, C2R2 Seminar, South Korea, February 24<sup>th</sup>, 2022</p> <p>Mono-energetic <math>\gamma</math>-ray facilities and nuclear astrophysics, International Research Network for Nuclear Astrophysics (IReNA) Virtual Workshop on stellar burning, June 24<sup>th</sup>, 2020</p> <p>The Path to Accurate Measurements with Gamma Beams, Nuclear Physics in Stellar Explosions 2018, Debrecen, Hungary, 13<sup>th</sup> September 2018</p> <p>Neutron Detection for Monitoring Gamma Beams at ELI-NP, Neutron Users Club 2017, National Physical Laboratory, Teddington, UK, 24<sup>th</sup> October 2017</p> <p>Nuclear Astrophysics with Gamma Beams at ELI-NP, 9<sup>th</sup> European Summer School on Experimental Nuclear Astrophysics, Santa Tecla, Italy, 20<sup>th</sup> September 2017</p> <p>Nuclear Physics Experiments with Gamma Beams at ELI-NP, Turkish Physical Society 33rd International Physics Congress – TPS33, Bodrum, Turkey, 7<sup>th</sup> September 2017</p> <p>Gamma Beam Diagnostics and Experiments at ELI-NP, NIF Group Seminar, Nuclear and Chemistry Division, Lawrence Livermore National Laboratory, Livermore, CA, 25<sup>th</sup> October 2016</p> <p>ELI-NP Nuclear Physics and Applications with High-Brilliance Monochromatic Gamma Beam, ELI and HILASE Summer School, Prague, Czech Republic, 25<sup>th</sup> August 2016</p> <p>From Big Bang to Stellar Helium Burning at ELI-NP”, 9<sup>th</sup> International Balkan School on Nuclear Physics, Constanta, Romania, 15<sup>th</sup> July 2016</p> <p>How to Prepare an Experiment using the Gamma Beam System at ELI-NP, Carpathian Summer School of Physics 2016, Sinaia, Romania, 1<sup>st</sup> July 2016</p> <p>Nuclear Astrophysics Measurements with ELISSA at ELI-NP”, Nuclear Physics Group Seminar, University of York, York, United Kingdom, 8<sup>th</sup> March 2016</p> <p>Stellar Helium Burning: Precision Nuclear Astrophysics?, Nuclear Astrophysics Workshop, Sungkyunkwan University, Suwon, South Korea, October 2013</p> <p>R-matrix analysis of the <math>^{12}\text{C}(\alpha, n)^{16}\text{O}</math> reaction, Nuclear Physics Group Seminar, University of Tennessee, Knoxville, TN, February 2009</p> <p>VANDLE - Neutron Detector Array for Nuclear Reactions and Decay Studies”, Stewardship Science Workshop, Lawrence Livermore National Laboratory, Livermore, CA, October 2008</p>
<b>Peer Review Activity</b>	<p>National Science Foundation (NSF), USA – Reviewer for Physics Division</p> <p>The Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Romania - Reviewer for Physics &amp; Engineering Section</p> <p>European Physical Journal A, Nuclear Instrument and Measurements A, Radiation Protection Dosimetry</p>