

Curriculum Vitae

Athanasios Psaltis, Ph.D.

Postdoctoral Researcher

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Research Interests

nuclear astrophysics • radiative capture reactions with recoil separators • nuclear reaction networks
• charged-particle spectroscopy • in-beam and activation γ -ray spectroscopy • experimental studies with stable and radioactive ion beams

Education

McMaster University • Hamilton, ON, Canada September 2015 – August 2020
Ph.D. in Physics

Advisor: Prof. [Alan Chen](#)

Thesis title: “Radiative alpha capture on ^7Be with DRAGON at νp -process nucleosynthesis energies”

National and Kapodistrian University of Athens • Athens, Greece October 2010 – September 2014
B.Sc. in Physics

Advisor: Assoc. Prof. [Theodoros Mertzimekis](#)

Minored in astrophysics. Thesis title: “Experimental studies of cross sections and angular distributions of $^{112}\text{Cd}(p,\gamma)^{113}\text{In}$ with application in nucleosynthesis”

Research Positions

Technische Universität Darmstadt – Postdoctoral Researcher September 2020 – Present
Darmstadt, Germany

Working with [Prof. Almudena Arcones](#) on nuclear and astrophysical uncertainties in core-collapse supernovae and neutron star mergers using reaction network calculations. [Pubs. A009, A010, A012, A015]

McMaster University – Research Assistant September 2015 – August 2020
Hamilton, ON, Canada

Worked with [Prof. Alan Chen](#) in the nuclear astrophysics group. Participated in experiments at major nuclear physics laboratories worldwide as a visiting graduate researcher (TRIUMF, RIKEN, NSCL, Argonne National Laboratory, TUNL and Maier-Leibnitz-Laboratorium). [Pubs. A003–A008, A011, A013, A014, A016, B001–B005, B007–B010]

Los Alamos National Laboratory – Visiting Graduate Researcher May 2019
Los Alamos, NM, USA

Worked with Drs. Samuel Jones and Chris Fryer on reaction network calculations for the νp -process with [NuGrid](#). Code development on NuGrid’s NuPPN to include neutrino reactions.

TRIUMF – Visiting Graduate Researcher June 2017 – September 2017
Vancouver, BC, Canada

Worked with the [DRAGON group](#) during the preparations of my Ph.D. thesis project. Also assisted in other experiments carried by the DRAGON/TUDA group. [Pubs. B003, B007]

N.C.S.R. “Demokritos” – Undergraduate Researcher
Athens, Greece

November 2013 – March 2014

Worked in the **Tandem Accelerator Lab** of the Institute of Nuclear and Particle Physics for my undergraduate thesis, conducting the first cross section and angular distribution measurements of the astrophysically interesting reaction $^{112}\text{Cd}(p,\gamma)^{113}\text{In}$ for p -process nucleosynthesis. I also assisted in two more nuclear astrophysics experiments, studying cross sections and angular distributions of $^{\text{nat}}\text{Ag}(p,\gamma)^{108,109}\text{Cd}$ and $^{110}\text{Pd}(p,\gamma)^{111}\text{Ag}$.
[Pubs. A002, A003, B006, C001, C002]

NuSTRAP - University of Athens – Database Contributor
Athens, Greece

November 2011 – September 2015

Completion and upgrade of the **Electromagnetic Moment Resources online database**. The database is currently hosted by International Atomic Energy Agency (IAEA) **Nuclear Data Services**. [Pub. A001]

Honours & Awards

The Frank Dennee Scholarship – McMaster University	2017, 2019
ComSciCon 2018 – National Science Communication Workshop	2018
Selection to attend the workshop from over 900 applicants.	
International Excellence Award – McMaster University	2018
The Bridge residency program – SciArt Center	2017
Four-month virtual residency program, where artists and scientists are paired to collaborate on a project of their choice.	

Approved User Facility Proposals

5. “*Determining the Site of Globular Cluster Potassium Enrichment via the $^{38}\text{Ar}(p,\gamma)^{39}\text{K}$ Reaction in Inverse Kinematics*”
Spokesperson: C. Marshall, Co-spokespersons: **A. Psaltis** and K. Chipps
e21070 of FRIB PAC1 meeting (2021)
4. “*Studying neutrino-driven wind nucleosynthesis with MUSIC: Measurement of the $^{93}\text{Sr}(\alpha, \text{xn})$ cross section*”
Spokespersons: **A. Psaltis** and W.J. Ong
#1923 of the ATLAS PAC (2021)
3. “*Studying supernova nucleosynthesis with CRIB: Measurement of the $^{13}\text{N}(\alpha, p)^{16}\text{O}$ reaction*”
Spokesperson: **A. Psaltis**
AVF69 of the 21st Nuclear Physics PAC of RI Beam factory (2020)
2. “*Studying stellar helium burning with DRAGON: Direct measurement of the $^{18}\text{O}(\alpha, \gamma)^{22}\text{Ne}$ reaction*”
Spokespersons: **A. Psaltis**, A.A. Chen, A. Lennarz and M. Williams
S1928 of TRIUMF EEC 201906S meeting (2019)
1. “*Breakout reactions from the pp -chain and the vp -process: Measurement of the $^7\text{Be}(\alpha, \gamma)^{11}\text{C}$ reaction rate in inverse kinematics*”
Spokespersons: **A. Psaltis**, A.A. Chen and D.S. Connolly
S1692 of TRIUMF EEC 201607S meeting (2016)

Teaching Experience

McMaster University – Teaching Assistant
Hamilton, ON, Canada

September 2015 – May 2020

Introduction to experiments, one-on-one lab assistance (~ 30 students), answering questions, test invigilation as well as marking quizzes, lab reports and exams.

Classes taught:

- *PHYS 1A03*: Introductory Physics
- *PHYS 1E03*: Waves, Electricity and Magnetic Fields

- *PHYS 1AA3*: Introduction to Modern Physics
- *Astronomy/Origins 2B03*: Big Questions
- *Arts & Science 2D06*: Physics
- *iSCI 3A12*: Light, the Universe, and Everything (LUE)

Mentoring:

- Jan Kuske: Nucleosynthesis calculations for the r -process (M.Sc. student 2021 – present)
- Liam Kroll: Core–Collapse Supernovae simulations with MESA (summer student 2018, 2019)
Now graduate student at Dalhousie University (Halifax, NS, Canada)
- Physics & Astronomy Mentor-mentee program (2016 – 2020)

Science Communication

ComSciConCAN – Co-founder/ Organizing Committee Member September 2018 - Present

ComSciCon is a workshop series organized by graduate students, for graduate students, focused on science communication skills. Our goal is to empower future leaders in technical communication to share the results from research in their field to broad and diverse audiences, not just practitioners in their fields. The event started in the US in 2013 and for the first time it was hosted in Canada in summer 2019.

ScienceSeeker – Science news editor February 2016 - Present

Editing in one of the Top 100 Science Blogs on the Web. My role includes picking interesting blog posts about Art, Physics and General Science out of a collection of 2,300 blogs and other science news sources from around the globe every week. Picks can be found in Twitter using the hashtag [#SciSeekPicks](#).

William J. McCallion Planetarium – Producer/Presenter November 2015 - August 2020
Hamilton, ON, Canada

Production and live presentation of educational shows. Presented in thousands of people, mostly students and the general public. Produced three full-dome interactive public shows:

- “*Rust and stardust: The lives of the stars and the origin of the elements*” – 2016
- “*Star Wars: The Science Awakens*” – 2017
- “*The golden dance of death*” – 2019

Pint of Science – City Coordinator January 2018 - August 2020
Hamilton, ON, Canada

Pint of Science is a non-profit organization that brings some of the most brilliant scientists to your local pub to discuss their latest research and findings with you. Organization of the event in Hamilton.

Researchers’ Night Hamilton – Coordinator October 2015 - August 2020
Hamilton, ON, Canada

Researchers’ Night is a European-based concept, which gives the public a unique opportunity to interact with scientists in a non-formal way for an evening. Coordination of the invited scientists, setup of the event and social media coverage.

SciCo – Science Ambassador September 2015 - April 2019
Athens, Greece

SciCo is the first Non Profit Science Communication Organization in Greece. Part of the organizing team of the biggest Science Festival in Greece with more than 30,000 visitors every year - [Athens Science Festival](#). Attended trainings on creative writing, creative storytelling and science communication.

Professional Service

“Virtual workshop on (α, n) reactions for astrophysics” – Chair 14-15 July 2021

NuGrid Collaboration – PI Team February 2021 – Present

SFB 1245 – Member September 2020 – Present

JINA Horizons – Twitter Team 30 November – 4 December 2020

IReNA Online Seminar Series – Committee Member September 2020 – Present

Chair since October 2021.

Publications

 ORCID iD: [0000-0003-2197-0797](https://orcid.org/0000-0003-2197-0797)

Journal Publications: 3 first/second author, 13 Nth author

Conference Proceedings: 3 first author, 7 Nth author

A Journal Publications

- [A016] T. Budner *et al.* (including **A. Psaltis**), *Constraining the $^{30}\text{P}(p,\gamma)^{31}\text{S}$ reaction rate in ONe novae via ^{31}Cl β -delayed proton decay*, Phys. Rev. Lett., Submitted (2021)
- [A015] J. Hooker *et al.* (including **A. Psaltis**), *Use of Bayesian Optimization to Understand the Structure of Nuclei*, Nucl. Instr. Meth. Phys. Res. B, **512** 6 (2022),  [10.1016/j.nimb.2021.11.014](https://doi.org/10.1016/j.nimb.2021.11.014)
- [A014] J. S. Randhawa *et al.* (including **A. Psaltis**), *First direct measurement of $^{59}\text{Cu}(p,\alpha)^{56}\text{Ni}$: A step towards constraining the Ni-Cu cycle in the Cosmos*, Phys. Rev. C, **104** L042801 (2021),  [10.1103/PhysRevC.104.L042801](https://doi.org/10.1103/PhysRevC.104.L042801)
- [A013] M. Witt, **A. Psaltis** *et al.*, *Post-explosion evolution of core-collapse supernovae*, Astrophys. J, **921** 19 (2021),  [10.3847/1538-4357/ac1a6d](https://doi.org/10.3847/1538-4357/ac1a6d)
- [A012] J. Hu *et al.* (including **A. Psaltis**), *Advancement of Photospheric Radius Expansion and Clocked Type-I X-Ray Burst Models with the New $^{22}\text{Mg}(\alpha,p)^{25}\text{Al}$ Reaction Rate Determined at the Gamow Energy*, Phys. Rev. Lett., **127**, 172701 (2021),  [10.1103/PhysRevLett.127.172701](https://doi.org/10.1103/PhysRevLett.127.172701)
- [A011] M. Holl *et al.* (including **A. Psaltis**), *Proton inelastic scattering reveals deformation in ^8He* , Phys. Lett. B, **822**, 136710 (2021),  [10.1016/j.physletb.2021.136710](https://doi.org/10.1016/j.physletb.2021.136710)
- [A010] P. Mohr *et al.* (including **A. Psaltis**), *Astrophysical reaction rates of α -induced reactions for nuclei with $26 \leq Z \leq 83$ from the new Atomki-V2 α -nucleus potential*, At. Data Nucl. Data Tables, **142**, 101453 (2021),  [10.1016/j.adt.2021.101453](https://doi.org/10.1016/j.adt.2021.101453)
- [A009] T. N. Szegedi *et al.* (including **A. Psaltis**), *Activation thick target yield measurement of $^{100}\text{Mo}(\alpha,n)^{103}\text{Ru}$ for studying the weak r-process nucleosynthesis*, Phys. Rev. C, **104**, 035804 (2021),  [10.1103/PhysRevC.104.035804](https://doi.org/10.1103/PhysRevC.104.035804)
- [A008] G. Lotay *et al.* (including **A. Psaltis**), *First direct measurement of an astrophysical p process reaction cross section using a radioactive ion beam*, Phys. Rev. Lett., **127**, 112701 (2021),  [10.1103/PhysRevLett.127.112701](https://doi.org/10.1103/PhysRevLett.127.112701)
- [A007] M. Lovely *et al.* (including **A. Psaltis**), *Proton capture on ^{34}S in the astrophysical energy regime of ONe novae*, Phys. Rev. C, **103**, 055801 (2021),  [10.1103/PhysRevC.103.055801](https://doi.org/10.1103/PhysRevC.103.055801)
- [A006] **A. Psaltis** *et al.*, *Beyond the acceptance limit of DRAGON: the case of the $^6\text{Li}(\alpha,\gamma)^{10}\text{B}$ reaction*, Nucl. Instr. Meth. Phys. Res. A, **987**, 164828 (2021),  [10.1016/j.nima.2020.164828](https://doi.org/10.1016/j.nima.2020.164828)
- [A005] M. Williams *et al.* (including **A. Psaltis**), *First inverse kinematics study of the $^{22}\text{Ne}(p,\gamma)^{23}\text{Na}$ reaction and its role in AGB star and classical nova nucleosynthesis*, Phys. Rev. C, **102**, 035801 (2020),  [10.1103/PhysRevC.102.035801](https://doi.org/10.1103/PhysRevC.102.035801)
- [A004] A. Lennarz *et al.* (including **A. Psaltis**), *First inverse kinematics measurement of key resonances in the $^{22}\text{Ne}(p,\gamma)^{23}\text{Na}$ reaction at stellar temperatures*, Phys. Lett. B **807**, 135539 (2020),  [10.1016/j.physletb.2020.135539](https://doi.org/10.1016/j.physletb.2020.135539)
- [A003] **A. Psaltis** *et al.*, *Cross-section measurements of radiative proton-capture reactions in ^{112}Cd at energies of astrophysical interest*, Phys. Rev. C **99** (6), 065807 (2019),  [10.1103/PhysRevC.99.065807](https://doi.org/10.1103/PhysRevC.99.065807)
- [A002] A. Khaliel *et al.* (including **A. Psaltis**), *First cross-section measurements of the reactions $^{107,109}\text{Ag}(p,\gamma)^{108,110}\text{Cd}$ at energies relevant to the p process*, Phys. Rev. C **96**, 035806 (2017),  [10.1103/PhysRevC.96.035806](https://doi.org/10.1103/PhysRevC.96.035806) – Academy of Athens award on Experimental Physics
- [A001] T.J. Mertzimekis, K. Stamou and **A. Psaltis**, *An online database of nuclear electromagnetic moments*, Nucl. Instr. Meth. Phys. Res. A, **807**, 56 (2016),  [10.1016/j.nima.2015.10.096](https://doi.org/10.1016/j.nima.2015.10.096)

B Conference Proceedings (Peer–Reviewed)

- [B010] J. Liang *et al.* (including **A. Psaltis**), *Spectroscopic Study of ^{39}Ca for Endpoint Nucleosynthesis in Classical Novae*, J. Phys.: Conf. Ser. **1668** 012025 (2020), doi [10.1088/1742-6596/1668/1/012025](https://doi.org/10.1088/1742-6596/1668/1/012025)
- [B009] **A. Psaltis et al.**, *Study of the $^7\text{Be}(\alpha, \gamma)^{11}\text{C}$ reaction with DRAGON for νp -process nucleosynthesis*, J. Phys.: Conf. Ser. **1668** 012035 (2020), doi [10.1088/1742-6596/1668/1/012035](https://doi.org/10.1088/1742-6596/1668/1/012035)
- [B008] H. Shimizu *et al.* (including **A. Psaltis**), *Study on $^{26m}\text{Al}(p, \gamma)$ Reaction at the SNe Temperature*, JPS Conf. Proc. **31**, 011073 (2020), doi [10.7566/JPSCP.31.011073](https://doi.org/10.7566/JPSCP.31.011073)
- [B007] **A. Psaltis et al.**, *Radiative alpha capture on ^7Be with DRAGON at energies relevant to the νp -process*, Springer Proceedings in Physics – NIC XV (2018), 425-428, doi [10.1007/978-3-030-13876-9_81](https://doi.org/10.1007/978-3-030-13876-9_81)
- [B006] **A. Psaltis et al.**, *First radiative proton–capture cross–section measurements in mid–weight nuclei relevant to the p -process*, Springer Proceedings in Physics – NIC XV (2018), 421-424, doi [10.1007/978-3-030-13876-9_80](https://doi.org/10.1007/978-3-030-13876-9_80)
- [B005] J. Liang *et al.* (including **A. Psaltis**), *Spectroscopic study on ^{39}Ca using the $^{40}\text{K}(d, t)^{39}\text{Ca}$ reaction for classical nova endpoint nucleosynthesis*, Springer Proceedings in Physics – NIC XV (2018), 397-400, doi [10.1007/978-3-030-13876-9_74](https://doi.org/10.1007/978-3-030-13876-9_74)
- [B004] H. Shimizu *et al.* (including **A. Psaltis**), *Isomeric ^{26}Al beam production with CRIB*, EPJ Web of Conferences **184**, 02013 (2018), doi [10.1051/epjconf/201818402013](https://doi.org/10.1051/epjconf/201818402013)
- [B003] N. Vukman *et al.* (including **A. Psaltis**), *Examining the Helium Cluster Decays of the ^{12}Be Excited States by Triton Transfer to the ^9Li Beam*, RÁBIDA 2018: Basic Concepts in Nuclear Physics: Theory, Experiments and Applications pp 257-258, doi [10.1007/978-3-030-22204-8_43](https://doi.org/10.1007/978-3-030-22204-8_43)
- [B002] D. Kahl *et al.* (including **A. Psaltis**), *Impact of the $^{26m}\text{Al}(p, \gamma)$ reaction to galactic ^{26}Al yield*, AIP Conference Proceedings **1947**, 020003 (2018), doi [10.1063/1.5030807](https://doi.org/10.1063/1.5030807)
- [B001] D. Kahl *et al.* (including **A. Psaltis**), *Isomer beam elastic scattering: $^{26m}\text{Al}(p, p)$ for Astrophysics*, EPJ Web of Conferences **165**, 01030 (2017), doi [10.1051/epjconf/201716501030](https://doi.org/10.1051/epjconf/201716501030)

C Conference Proceedings (Non–Peer–Reviewed)

- [C002] A. Khaliel *et al.* (including **A. Psaltis**), *Experimental Investigation of radiative proton-capture reactions relevant to Nucleosynthesis*, HNPS2016 Proceedings, doi [10.12681/hnps.1861](https://doi.org/10.12681/hnps.1861)
- [C001] E. Batziou *et al.* (including **A. Psaltis**), *Modeling radiative proton–capture reactions in mid–heavy nuclei*, HNPS2015 Proceedings, doi [10.12681/hnps.1893](https://doi.org/10.12681/hnps.1893)

D Books

- [D003] *Galactic and Stellar Physics* by A.G.W. Cameron, Based on a course lecture given at Yale University 1964-1965, Compiled by W.D. Arnett, C.J. Hansen and J.W. Truran, re-typeset in L^AT_EX by D. Kahl, **A. Psaltis** and J. Liang (in preparation)
- [D002] *Physics of the Solar System* by A.G.W. Cameron, Based on a course lecture given at Yale University 1963-1964, Compiled by W.D. Arnett, C.J. Hansen and J.W. Truran, re-typeset in L^AT_EX by D. Kahl, **A. Psaltis** and J. Liang (in preparation)
- [D001] *Nuclear Astrophysics* by A.G.W. Cameron, Based on a course lecture given at Yale University 1962-1963, Assisted by W.D. Arnett, C.J. Hansen and J.W. Truran, re-typeset in L^AT_EX by D. Kahl, **A. Psaltis** and J. Liang (in preparation)

Academic Presentations

Advisory Committee On TRIUMF (ACOT) meeting – invited poster (Virtually)	November 2021
28th Symposium of the Hellenic Nuclear Physics Society – oral (Athens, Greece)	September 2021
XVI Nuclei in the Cosmos – oral & poster (Virtually)	September 2021
DPG Matter and Cosmos Section – oral (Virtually)	August 2021
TRIUMF Science Week – poster (Virtually)	August 2021
2021 CAP Virtual Congress – oral (Virtually)	June 2021
IKP Seminar – invited oral (Darmstadt, Germany)	August 2020
Advisory Committee On TRIUMF (ACOT) meeting – invited oral (Vancouver, BC, Canada)	November 2019
7th p-process workshop 2019 – oral (Serralunga d’ Alba, Italy)	September 2019
Nuclear Physics in Astrophysics IX – oral (Mainz, Germany)	September 2019
CNLS Astrophysics Friday Meeting – invited oral (Los Alamos, NM, USA)	May 2019
5th Joint Meeting of the APS DNP and the Physical Society of Japan – oral (Waikoloa, HI, USA)	October 2018
15th International Symposium on Nuclei in the Cosmos – posters (Assergi, Italy)	June 2018
15th Rußbach School on Nuclear Astrophysics – oral (Rußbach, Austria)	March 2018
Nuclear Astrophysics at Rings and Recoil Separators Workshop – oral (Darmstadt, Germany)	March 2018
TRIUMF Science Week – poster (Vancouver, BC, Canada)	July 2017
2017 JINA-CEE Frontiers in Nuclear Astrophysics – oral (Lansing, MI, USA)	February 2017
McMaster Physics & Astronomy Symposium Day – oral (Hamilton, ON, Canada)	October 2016
École Joliot-Curie: “Origin of Nuclei in the Universe” – poster (Le Barcarès, France)	September 2016
p-process Workshop 2015: Status and Outlook – oral (Limassol, Cyprus)	June 2015
24th Symposium of the Hellenic Nuclear Physics Society – poster (Ioannina, Greece)	May 2015
23th Symposium of the Hellenic Nuclear Physics Society – oral (Thessaloniki, Greece)	June 2014
Charged Particle Optics: Theory and Simulation (CPOTS 2013) – oral (Heraklion, Greece)	August 2013
21st Symposium of the Hellenic Nuclear Physics Society – poster (Athens, Greece)	May 2012

References

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