

# Melina L. Avila

## Education

- 2013 **Ph.D. in Physics**, *Florida State University*, Tallahassee FL.  
Advisor: Dr. Grigory Rogachev  
Dissertation project: Clustering in  $^{18}\text{O}$  and ANC measurements using  $(^6\text{Li},d)$  reactions.
- 2009 **M.S. in Physics**, *Florida State University*, Tallahassee FL.  
Fulfillment of academic requirements.
- 2007 **Bachelor in Physics**, *Universidad Autonoma de Nuevo Leon*, Monterrey NL, Mexico.  
Undergraduate Project: Characterization of leukemia by electrical impedance spectroscopy.

## Employment

- 2016-Present **Assistant Physicist-Experimentalist**, *Argonne National Laboratory*.  
2014-2016 **Postdoctoral Appointee**, *Argonne National Laboratory*.  
2008–2013 **Research Assistant**, *John D. Fox Superconducting Linear Accelerator Laboratory at Florida State University*, Dr. Grigory Rogachev.

## Research Interests

Nuclear Structure, Nuclear Astrophysics, Resonant scattering, Transfer reactions.

## Publications

- V.Z. Goldberg, B.T. Roeder, G.V. Rogachev, G.G. Chubarian, E.D. Johnson, C. FU, A.A. Alharabi, **M.L. Avila**, A. Banu, M McCleskey, J.P. Mitchell, E. Simmons, G. Tabacaru, G. L. Trache, R.E. Tribble  
“First Observation of  $^{14}\text{F}$ ”, *Phys. Lett. B* **46** (2010) 307.
- D. Santiago-Gonzalez, I. Wiedenhöver, V. Abramkina, **M.L. Avila**, T. Baugher, D. Bazin, B.A. Brown, P.D. Cottle, A. Gade, T. Glasmacher, K.W. Kemper, S. McDaniel, A. Rojas, A., A. Ratkiewicz, R. Meharchand, E.C. Simpson, J.A. Tostevin, A. Volya, D. Weisshaar  
“Triple configuration coexistence in  $^{44}\text{S}$ ”, *Phys. Rev. C* **83**, 061305(R) (2011)
- M.La Cognata, C. Spitaleri, O. Trippella, G.G. Kiss, G.V. Rogachev, A.M. Mukhamedzhanov, **M. Avila**, G.L. Guardo, E. Koshchiy, A. Kuchera, L. Lamia, S.M.R. Puglia, S. Romano, D. Santiago, R. Sparta  
“Measurement of the -3 keV Resonance in the Reaction  $^{13}\text{C}(\alpha, n)^{16}\text{O}$  of Importance in the s-Process”, *Phys. Rev. Lett.* **109**, 232701 (2012)

- M.La Cognata, C. Spitaleri, O. Trippella, G.G. Kiss, G.V. Rogachev, A.M. Mukhamedzhanov, **M. Avila**, G.L. Guardo, E. Koshchiy, A. Kuchera, L. Lamia, S.M.R. Puglia, S. Romano, D. Santiago, R. Sparta  
“On the measurement of the  $^{13}\text{C}(\alpha, n)^{16}\text{O}$   $S$ -factor at negative energies and its influence on the  $s$ -Process”, *Astrophys. J.* **777**, 143 (2013)
- **M.L. Avila**, G.V. Rogachev, V.Z. Goldberg, E.D. Johnson, K.W. Kemper, Yu M. Tchuvil’sky, A. S. Volya  
“ $\alpha$ -cluster structure of  $^{18}\text{O}$ ”, *Phys. Rev. C* **90**, 024327 (2014)
- **M.L. Avila**, G.V. Rogachev, E. Koshchiy, L.T. Baby, J. Belarge, K.W. Kemper, A.N. Kuchera, D. Santiago-Gonzalez  
“ $\alpha$ -cluster asymptotic normalization coefficients for nuclear astrophysics”, *Phys. Rev. C* **90**, 042801(R) (2014)
- **M.L. Avila**, G.V. Rogachev, E. Koshchiy, L.T. Baby, J. Belarge, K.W. Kemper, A.N. Kuchera, A.M. Mukhamedzhanov, D. Santiago-Gonzalez, E. Uberseder  
“Constraining the 6.05 MeV  $0^+$  and 6.13 MeV  $3^-$  Cascade Transitions in the  $^{12}\text{C}(\alpha, \gamma)^{16}\text{O}$  Reaction Using the Asymptotic Normalization Coefficients”, *Phys. Rev. Lett.* **114**, 071101 (2015).
- C.L. Jiang, A. M. Stefanini, H. Esbensen, K. E. Rhem, S. Almaraz-Calderon, **M. L. Avila**, B. B. Back, D. Bourgin, L. Corradi, S. Courtin, E. Fioretto, F. Galtarossa, A. Goasduff, F. Haas, M.M. Mazzocco, D. Montanari, G. Montagnoli, T. Mijatovic, R. Sagaidak, D. Santiago-Gonzalez, F. Scarlassara, E. E. Strano, S. Szilner  
“Fusion reactions of  $^{58,64}\text{Ni}+^{124}\text{Sn}$ ”, *Phys. Rev. C.* **91**, 044602 (2015).
- **M.L. Avila**, G.V. Rogachev, E. Koshchiy, L.T. Baby, J. Belarge, K.W. Kemper, A.N. Kuchera, D. Santiago-Gonzalez  
“New measurement of the  $\alpha$  asymptotic normalization coefficient of the  $1/2^+$  state in  $\text{O}^{17}$  at 6.356 MeV that dominates the  $^{13}\text{C}(\alpha, n)^{16}\text{O}$  reaction rate at temperatures relevant for the  $s$  process”, *Phys. Rev. C.* **91**, 048801(2015).
- M. Munch, M. Alcorta, H. O. U. Fynbo, M. Albers, S. Almaraz-Calderon, **M. L. Avila**, A. D. Ayangeakaa, B. B. Back, P. F. Bertonee, P. F. F. Carnelli, M. P. Carpenter, C. J. Chiara, J. A. Clark, B. DiGiovine, J. P. Greene, J. L. Harker, C. R. Hoffman, N. J. Hubbard, C. L. Jiang, O. S. Kirsebom, T. Lauritsen, K. L. Laursen, S. T. Marley, C. Nair, O. Nusair, D. Santiago-Gonzalez, J. Sethi, D. Seweryniak, R. Talwar, C. Ugalde and S. Zhu  
“Independent measurement of the Hoyle state  $\beta$  feeding from  $^{12}\text{B}$  using Gammasphere”, *Phys. Rev. C.* **93**, 065803 (2016).
- **M.L. Avila**, K. E. Rehm, S. Almaraz-Calderon, A. D. Ayangeakaa, C. Dickerson C.R. Hoffman, C.L. Jiang, B.P. Kay, J. Lai, O. Nusair, R.C. Pardo, D. Santiago-Gonzalez, R. Talwar and C. Ugalde  
“Study of the astrophysically important  $^{23}\text{Na}(\alpha, p)^{26}\text{Mg}$  and  $^{23}\text{Na}(\alpha, n)^{26}\text{Al}$  reactions”, Submitted as a Regular Article in *Physical Review C* (arXiv:1608.03292)
- **M.L. Avila**, K. E. Rehm, S. Almaraz-Calderon, A. D. Ayangeakaa, C. Dickerson C.R. Hoffman, C.L. Jiang, B.P. Kay, J. Lai, O. Nusair, R.C. Pardo, D. Santiago-Gonzalez, R. Talwar and C. Ugalde  
“Study of the  $(\alpha, p)$  and  $(\alpha, n)$  reactions with a Multi-Sampling Ionization Chamber”, To be submitted to *Nuclear Instruments and Methods* (arXiv:1608.03290)

## Conference proceedings as first author

- **M.L. Avila**, K.E. Rhem, S. Almaraz-Calderon, P.F.F. Carnelli, B. DiGiovine, H. Esbensen, C.R. Hoffman, C.L. Jiang, B.P. Kay, J. Lai, O. Nusair, R.C. Pardo, D. Santiago-Gonzalez, R. Talwar and C. Ugalde  
“Study of the  $^{20,22}\text{Ne}+^{20,22}\text{Ne}$  and  $^{10,12,13,14,15}\text{C}+^{12}\text{C}$  Fusion Reactions with MUSIC”.  
The European Physical Journal Conferences **117**, 08009 (2016) NN2015

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## Oral presentations

- Apr 2016 **Direct measurement of astrophysically important  $\alpha$ -induced reactions (invited talk)**, *APS April meeting 2016*.  
South Lake City, Utah
- Mar 2016 **Measuring key  $\alpha$ -induced reaction rates with the MUSIC detector**, JINAC-EE Frontiers in Nuclear Astrophysics 2016.  
South Bend, Indiana
- Jan 2016 **Understanding Stellar Processes Through Nuclear Reactions**, Physics Colloquium at the department of Physics, Ohio University.  
Athens, Ohio
- Nov 2015 **Understanding Stellar Processes Through Nuclear Reactions**, Heavy Ion Discussion, Physics Division, Argonne National Laboratory.  
Argonne, Illinois
- Aug 2015 **ANCs at sub-Coulomb energies to constrain key  $\alpha$ -capture reaction rates (invited talk)**, Nuclear physics seminar at the University of Notre Dame.  
South Bend, Indiana
- Aug 2015 **New possibilities for key astrophysical  $\alpha$ -induced reactions studies (invited talk)**, Low energy community meeting (AIRIS workshop).  
East Lansing, Michigan
- Jun 2015 **Study of  $^{20,22,24}\text{Ne}+^{20,22}\text{Ne}$  and  $^{10,12,13,14,15}\text{C}+^{12}\text{C}$  fusion reactions with MUSIC**, Nucleus Nucleus 2015.  
Catania, Italy
- May 2015 **Nuclear reactions: Current status and perspectives (invited talk)**, The Nuclear Chemistry Gordon Research Seminar.  
New London, New Hampshire
- Mar 2013 **ANC measurements on ( $^6\text{Li},d$ ) reactions**, FSU Department of Nuclear Physics Seminar.  
Tallahassee, Florida
- Nov 2012 **ANC measurements on ( $^6\text{Li},d$ ) reactions**, 79th Annual Meeting of the Southeastern Section of the APS.  
Tallahassee, Florida
- Oct 2012 **ANC measurements on ( $^6\text{Li},d$ ) reactions**, Fall meeting of the APS Division of Nuclear Physics.  
Newport Beach, California
- Oct 2011 **Clustering phenomena in  $^{18}\text{O}$** , Fall meeting of the APS Division of Nuclear Physics.  
East Lansing, Michigan
- Sep 2011 **Clustering phenomena in  $^{18}\text{O}$** , 6th European Summer School on Experimental Nuclear Astrophysics.  
Catania, Italy

- Jun 2011 **Clustering phenomena in  $^{18}\text{O}$** , The Nuclear Chemistry Gordon Research Conference.  
New London, New Hampshire
- Apr 2011 **Clustering phenomena in  $^{18}\text{O}$** , FSU Department of Nuclear Physics Seminar.  
Tallahassee, Florida
- Oct 2009  **$\alpha$ -Clustering in  $^{18}\text{O}$** , FSU Department of Nuclear Physics Seminar.  
Tallahassee, Florida

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## Poster presentations

- May 2015 **Measurements of  $(\alpha, p)$  and  $(\alpha, n)$  reactions using the Active Target System MUSIC**, The Nuclear Chemistry Gordon Research Conference.  
New London, New Hampshire
- Jun 2011 **Clustering phenomena in  $^{18}\text{O}$** , The Nuclear Chemistry Gordon Research Conference.  
New London, New Hampshire
- Aug 2009  **$\alpha$ -Clustering in  $^{18}\text{O}$** , VIII Summer School on Exotic Beam Physics.  
Berkeley, California

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## Awards

- April 2013 **John D. Fox award in Nuclear Physics**, Department of physics, Florida State University.  
Tallahassee, Florida
- Jun 2011 **Poster presentation award winner**, The Nuclear Chemistry Gordon Research Conference.  
New London, New Hampshire

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## Professional Memberships

Member of the American Physical Society since 2011.

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## Languages

- Spanish Native  
English Full professional proficiency