

# CURRICULUM VITAE ET STUDIORUM

## Daniele Dell'Aquila

### PERSONAL INFORMATION



**Name:** Daniele Dell'Aquila

**Address:** Marof 23, Vratišinec, 40315 Mursko Središće, Croatia.

**Address (Italy):** 77, Via Cosentino Sava – 95123 Catania (CT), Italy

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**Nationality:** Italian

**Date of birth:** August 22th, 1990

### Education and training:

- 1. 2018: Ph.D. in Physics**, University of Naples “Federico II” and University Paris-Saclay (joint international agreement), *summa cum laude*. Thesis: *Clustering in light nuclear systems: a multi-method approach*. Mentors: Dr. Ivano Lombardo (University of Naples “Federico II”), Prof. Mariano Vigilante (University of Naples “Federico II”) and Dr. Giuseppe Verde (University Paris-Saclay).
- 2. 2014: Master Degree in Physics**, University of Catania, *summa cum laude*. Thesis: *Studio della struttura a cluster di  $^{10}\text{Be}$  e  $^{16}\text{C}$  tramite break-up indotto su target  $\text{CH}_2/\text{CD}_2$  ai LNS*. Mentors: Prof. Francesca Rizzo (University of Catania), Dr. Ivano Lombardo (University of Naples “Federico II”) and Giuseppe Cardella (INFN – Catania).
- 3. 2012: Degree in Physics**, University of Catania, *summa cum laude*. Thesis: *Studio della Reazione Nucleare  $^{19}\text{F}(p,\alpha)^{16}\text{O}$  a basse energie incidenti ( $0.540\text{MeV} \leq E_p \leq 1.034\text{MeV}$ )*. Mentors: Prof. Francesca Rizzo (University of Catania), Dr. Ivano Lombardo (University of Naples “Federico II”).
- 4. 2009: High school leaving qualification in scientific studies**, Liceo Scientifico e Linguistico Statale “Principe Umberto di Savoia” di Catania, highest score.

### Professional experience:

- **01/04/2019 – present: Post-Doctoral fellow** at the Ruđer Bošković Institute, Zagreb, Croatia.
- **01/11/2017 – 31/03/2019: Research Associate** at the Michigan State University – National Superconducting Cyclotron Laboratory, East Lansing, Michigan, U.S.A.

### Scientific group responsibilities:

**01/10/2016 – 31/01/2017: Responsible/coordinator** for the NewChim group budget at INFN Naples.

## Awards and recognitions:

1. **“Claudio Villi” Prize** of the Istituto Nazionale di Fisica Nucleare (INFN) for the best PhD thesis on nuclear physics subjects defended at Italian universities during the year 2018.
2. The paper **D. Dell'Aquila** et al., *Phys. Rev. Lett.* **119** (2017) 132501 has been the object of a *ViewPoint* in *Physics*: O. Kirsebom, *Physics* **10** (2017) 103.
3. The paper **D. Dell'Aquila** et al., *Phys. Rev. Lett.* **119** (2017) 132501 has been selected as **Editor's suggestion** in *Physical Review Letters*.
4. **“Operosità Scientifica – Giovanni Polvani” Prize** of the Società Italiana di Fisica SIF, 26/09/2016.
5. **“Migliore Comunicazione” Prize (First Classified)** for the “101° Congresso Nazionale della Società Italiana di Fisica SIF” conference in the Nuclear and Particle Physics session.
6. **First classified** in the Ph.D (XXX Cycle) in Physics at University of Catania (2014) admission examination. Score: 114/120.
7. **Second classified** in the Ph.D (XXX Cycle) in Physics at University of Naples “Federico II” (2014) admission examination. Score: 94.7/100.
8. **First classified** in the national competitive examination for INFN scholarship at LNS for Master degree students 2013/2014. Score: 95.11/100.
9. **First classified** in the competitive examination for **tutoring** activities in **Classical Physics** course, 1<sup>st</sup> degree in Physics, University of Catania.
10. The paper I. Lombardo **D. Dell'Aquila**, L. Campajola, E. Rosato, G. Spadaccini and M. Vigilante, *J. Phys. G: Nucl. Part. Phys.* **40** (2013) 125102, has been selected as **2013 Highlight** by the *Journal of Physics G: Nuclear and Particle Physics* journal board.
11. **“Giovanni Raciti” Prize** for the best Thesis and CV in Physics of the University of Catania in the Academic Year 2011/2012.
12. Grant for the master degree thesis given by the ERSU for the academic year 2013/2014.
13. Grant for the first degree thesis given by the ERSU for the academic year 2011/2012.

## Research Activities:

1. **Nuclear spectroscopy by means of light nuclei reactions at low energies.** Research Laboratories: Laboratorio dell'Acceleratore, Napoli, Italy; INFN-Laboratori Nazionali di Legnaro (LNL), Legnaro, Italy; INFN-Laboratori Nazionali del Sud (LNS), Catania, Italy. This research activity consists in the investigation of the structure of light nuclear systems by means of nuclear reactions at low energy (typically below or near the Coulomb barrier). I have widely measured this kind of reactions in several laboratories and during different stages of my formation (starting from my bachelor degree thesis), accomplishing relevant results published in international journals regarding nuclear clustering in light systems and the measurement of cross sections of astrophysical relevance. I have acquired data analysis and interpretation skills such as R-matrix and I have, in first person, participated in the development of a new generation hodoscope for nuclear physics. Recently, I have been spokesperson of an experiment probing for the first time at this level of precision, the structural properties of the Hoyle state, the most relevant example of clustering in nuclei. The result is recently published on *Physical Review Letters*, being selected as Editor's suggestion and additionally for a *View Point* in *Physics*.
2. **Equation of State of nuclear matter via Heavy Ion Collisions.** Research Laboratories: MSU-NSCL, East Lansing, USA. I am currently performing research activity in the field of Heavy Ion Collisions at the National Superconducting Cyclotron Laboratory (MSU-NSCL), as a research associate. This research activity consists in the study of the Equation of State of nuclear matter by means of nucleus-nucleus collision experiments at intermediate energies. The effort is mainly focused in the study of the Symmetry Energy and its density and momentum dependence. The latter, influences the effective masses of neutron and proton in asymmetric nuclear matter, and its investigation requires the simultaneous detection of protons, charged fragments and neutrons emitted in nuclear collisions. To achieve this goal, we developed experiments at the frontier of modern nuclear physics,

which make use of the coupling of several detectors for charged and neutral particles including HiRA10, the LANA neutron walls, and the Washington University Microball. I have acquired skills in the development of pixelization algorithms for DSSSD detectors, the development and analysis of neutron and gamma detectors and the design and implementation of data analysis frameworks for large collaborations as well as in the use of advanced simulation tools like GEANT4. I have extensively studied the effect of CsI crystal non-uniformities in the calibration of the scintillation light output of light charged particles, which is fundamental for the use of nuclear physics detectors based on CsI scintillators in application involving the detection of light particles. Results are currently submitted for publication.

3. **Particle-Particle correlations for invariant mass spectroscopy and nuclear thermometry in heavy-ion collisions.** Research Laboratories: IPN Orsay, France; GANIL, Caen, France; INFN-Laboratori Nazionali del Sud (LNS), Catania, Italy. I have largely used particle-particle and multi-particle correlations to probe the structure of light nuclei and the properties of nuclear medium produced in heavy ion collisions. Such activities are carried out via large solid angle detectors, which complement my expertise with modular and high-selective detectors. This activity was object of part of my PhD thesis, whose work was carried out during my stay at the Université Paris-Saclay, where I have accomplished, with excellent results, a PhD degree in Physics.
4. **Nuclear reactions induced by light exotic nuclei at intermediate energies.** Research Laboratories: RIKEN, Wako, Japan; INFN-Laboratori Nazionali del Sud (LNS), Catania, Italy. I have studied nuclei far from the stability at international research laboratories. I have published in relevant international journals interesting results on the structure of beryllium and carbon neutron rich isotopes investigated with invariant mass methods.

#### Publications on peer reviewed international journals:

1. **D. Dell'Aquila** et al., *Non-linearity effects on the light-output calibration of light charged particles in CsI(Tl) scintillator crystals*, *Nuclear Instruments and Methods in Physics Research A: Accelerators Spectrometers Detectors and Associated Equipment* **929** (2019) 162 ([corresponding author](#)).
2. L.Y. Zhang, ..., **D. Dell'Aquila** et al., *New Thermonuclear  $^{10}\text{B}(\alpha,p)^{13}\text{C}$  Rate and Its Astrophysical Implication in the np-process*, *The Astrophysical Journal* **868** (2018) 24.
3. N.S. Martorana, ..., **D. Dell'Aquila** et al., *First measurement of the isoscalar excitation above the neutron emission threshold of the Pygmy Dipole Resonance in  $^{68}\text{Ni}$* , *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* **782** (2018) 112.
4. B. Borderie, ..., **D. Dell'Aquila** et al., *Phase transition dynamics for hot nuclei*, *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* **782** (2018) 291.
5. E. Vient, ..., **D. Dell'Aquila** et al., *Understanding the thermometry of hot nuclei from the energy spectra of light charged particles*, *European Physical Journal A* **54** (2018) 96.
6. I. Lombardo, **D. Dell'Aquila**, G. Spadaccini, G. Verde and M. Vigilante, *Spectroscopy of  $^{13}\text{C}$  above a threshold with  $\alpha + ^9\text{Be}$  reactions at low energies*, *Physical Review C* **97** (2018) 034320 ([corresponding author](#)).
7. O. Lopez, ..., **D. Dell'Aquila** et al., *Improving isotopic identification with INDRA Silicon–CsI(Tl) telescopes*, *Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* **884** (2018) 140.
8. R. Bougault, ..., **D. Dell'Aquila** et al. *Light charged clusters emitted in 32 MeV/nucleon Xe  $^{136,124} + \text{Sn }^{124,112}$  reactions: Chemical equilibrium and production of He 3 and He 6*, *Physical Review C* **97** (2018) 024612.
9. Jian-Jun He, I. Lombardo, **D. Dell'Aquila**, Yi Xu, Li-Yong Zhang and Wei-Ping Liu, *Thermonuclear  $^{19}\text{F}(p,\alpha_0)^{16}\text{O}$  reaction rate*, *Chinese Physics C* **42** (2018) 15001.
10. **D. Dell'Aquila** et al., *OSCAR: a new modular device for the identification and correlation of low energy particles*, *Nuclear Instruments and Methods in Physics Research A: Accelerators Spectrometers Detectors and Associated Equipment* **877** (2018) 227 ([corresponding author](#)).

11. **D. Dell'Aquila** et al., *High precision probe of the fully sequential decay width of the Hoyle state in  $^{12}\text{C}$* , *Physical Review Letters* **119** (2017) 132501 ([corresponding author](#)).
12. C. Spitaleri, ... and **D. Dell'Aquila**, *Measurement of the  $B10(p, \alpha)Be7$  cross section from 5 keV to 1.5 MeV in a single experiment using the Trojan horse method*, *Phys. Rev. C* **95** (2017) 035801.
13. G. Pastore, ..., **D. Dell'Aquila** et al., *Isotopic identification using Pulse Shape Analysis of current signals from Silicon detectors: recent results from the FAZIA collaboration*, *Nuclear Instruments and Methods in Physics Research A: Accelerators Spectrometers Detectors and Associated Equipment* **860** (2017) 42.
14. **D. Dell'Aquila**, *Study of  $^{10}\text{Be}$  and  $^{16}\text{C}$  cluster structure by means of break-up reaction*, *Nuovo Cimento C* **39** (2016) 272 ([corresponding author](#)).
15. **D. Dell'Aquila** et al., *New experimental investigation of the structure of  $^{10}\text{Be}$  and  $^{16}\text{C}$  by means of intermediate-energy sequential breakup*, *Physical Review C* **93** (2016) 024611 ([corresponding author](#)).
16. I. Lombardo, **D. Dell'Aquila**, F. Conte, L. Francalanza, M. La Cognata, L. Lamia, R. La Torre, G. Spadaccini, C. Spitaleri and M. Vigilante, *New investigations of the  $^{10}\text{B}(p, \alpha)^7\text{Be}$  reaction at bombarding energies between 0.6 and 1 MeV*, *Journal of Physics G: Nuclear and Particle Physics* **43** (2016) 045109 ([corresponding author](#)).
17. G. Cardella, ..., **D. Dell'Aquila** et al., *Particle gamma correlations in  $^{12}\text{C}$  measured with the CsI(Tl) based detector array CHIMERA*, *Nuclear Instruments and Methods in Physics Research A: Accelerators Spectrometers Detectors and Associated Equipment* 799 (2015) 64-69.
18. I. Lombardo, **D. Dell'Aquila**, A. Di Leva, I. Indelicato, M. L. Cognata, M. La Commara, A. Ordine, V. Rigato, M. Romoli, E. Rosato, G. Spadaccini, C. Spitaleri, A. Tumino, M. Vigilante, *Towards a reassessment of the  $^{19}\text{F}(p, \alpha)^{16}\text{O}$  reaction rate at astrophysical temperatures*, *Physics Letters B* **748** (2015) 178-182.
19. I. Lombardo, **D. Dell'Aquila**, L. Campajola, E. Rosato, G. Spadaccini and M. Vigilante, *The  $^{19}\text{F}(p, \alpha)$  reaction at low bombarding energy*, *Bulletin of the Russian Academy of Science: Physics* **78** (2014) 1354-1357.
20. I. Lombardo, **D. Dell'Aquila**, L. Campajola, E. Rosato, G. Spadaccini and M. Vigilante, *Analysis of  $^{19}\text{F}(p, \alpha)^{16}\text{O}$  reaction at low energies and the spectroscopy of  $^{20}\text{Ne}$* , *Journal of Physics G: Nuclear and Particle Physics* **40** (2013) 125102.

Peer reviewed conference proceedings:

1. N.S. Martorana, ..., **D. Dell'Aquila** et al., *Experimental study of the pygmy dipole resonance in the  $^{68}\text{Ni}$  nucleus*, *Acta Physica Polonica B* **49** (2018) 475.
2. A. Trzcinska, ..., **D. Dell'Aquila** et al., *Influence of single particle excitations on barrier distributions:  $^{24}\text{Mg}+^{90,92}\text{Zr}$* , *Acta Physica Polonica B* **49** (2018) 393.
3. **D. Dell'Aquila** et al., *Experimental studies of the structure of  $^{16}\text{C}$  with reactions at intermediate energy*, *Acta Phys. Pol. B* **48** (2017) 499 ([corresponding author](#)).
4. I. Lombardo, **D. Dell'Aquila**, L. Francalanza, G. Spadaccini and M. Vigilante, *Structure of  $^{13}\text{C}$  excited states with low-energy reactions of a particles on  $^9\text{Be}$  nuclei*, *Acta Phys. Pol. B* **48** (2017) 467.
5. **D. Dell'Aquila** et al., *New experimental investigation of cluster structures in  $^{10}\text{Be}$  and  $^{16}\text{C}$  neutron-rich nuclei*, *Nuov. Cim. C* **39** (2016) 385 ([corresponding author](#)).
6. S. Norella, ..., **D. Dell'Aquila** et al., *The InKiIsSy experiment at LNS: A study of size vs. isospin effects with  $^{124}\text{Xe}+^{64}\text{Zn}, ^{64}\text{Ni}$  reactions at 35 AMeV*, *Nuov. Cim. C* **39** (2016) 413.
7. N.S. Martorana, ..., **D. Dell'Aquila** et al., *Study on the isospin equilibration phenomenon in nuclear reactions  $^{40}\text{Ca}+^{40}\text{Ca}$ ,  $^{40}\text{Ca}+^{46}\text{Ti}$ ,  $^{40}\text{Ca}+^{48}\text{Ca}$ ,  $^{48}\text{Ca}+^{48}\text{Ca}$  at 25 MeV/nucleon by using the CHIMERA multidetector*, *Nuov. Cim. C* **39** (2016) 412.
8. S. De Luca, ..., **D. Dell'Aquila** et al., *Test of GET Electronics for the CHIMERA and FARCOS multi-detectors*, *Nuov. Cim. C* **39** (2016) 411.
9. G. Cardella, ..., **D. Dell'Aquila** et al., *Past and future detector arrays for complete event reconstruction in heavy-ion reactions*, *Nuov. Cim. C* **39** (2016) 407.

10. E.V. Pagano, ..., **D. Dell'Aquila** et al., *Signals of dynamical and statistical process from IMF-IMF correlation function*, *Nuov. Cim. C* **39** (2016) 404.
11. B. Gnoffo, ..., **D. Dell'Aquila** et al., *N/Z effect on reaction mechanisms cross sections in the  $^{78}\text{Kr}+^{40}\text{Ca}$  and  $^{86}\text{Kr}+^{48}\text{Ca}$  collisions at 10 AMeV*, *Nuov. Cim. C* **39** (2016) 403.
12. L. Quattrocchi, ..., **D. Dell'Aquila** et al., *Three- $\alpha$  particle correlations in quasi-projectile decay in  $^{12}\text{C}+^{24}\text{Mg}$  collisions at 35 AMeV*, *Nuov. Cim. C* **39** (2016) 391.
13. M. Papa, ..., **D. Dell'Aquila** et al., *Isospin equilibration processes and dipolar signals: Coherent cluster production*, *Nuov. Cim. C* **39** (2016) 387.
14. G. Pastore, ..., **D. Dell'Aquila** et al., *Progresses in FAZIA detection system and preliminary results from the ISO-FAZIA experiment*, *Nuov. Cim. C* **39** (2016) 383.
15. E. De Filippo, ..., **D. Dell'Aquila** et al., *Sensitivity to N/Z/N/Z ratio in fragment productions for the isobaric systems  $^{124}\text{Xe}+^{64}\text{Zn}$ ,  $^{64}\text{Ni}$  and  $^{124}\text{Sn}+^{64}\text{Ni}$  at E/A=35 MeV*, *Nuov. Cim. C* **39** (2016) 379.
16. F. Salomon, ..., **D. Dell'Aquila** et al., *Front-end electronics for the FAZIA experiment*, *Journal of Instrumentation* **11** (2016) C01064.

Conference proceedings:

1. **D. Dell'Aquila** et al., *The  $\alpha$ -decay of the Hoyle state in  $^{12}\text{C}$ : a new high-precision investigation*, *EPJ Web of Conferences* **184** (2018) 01005 ([corresponding author](#)).
2. S.S. Perrotta, ..., **D. Dell'Aquila** et al., *The Treiman-Yang Criterion: validating the Trojan Horse Method by experimentally probing the reaction mechanism*, *EPJ Web of Conferences* **184** (2018) 02012.
3. M. Cicerchia, ..., **D. Dell'Aquila** et al., *A study in 4 reactions forming  $^{46}\text{Ti}^*$* , *Journal of Physics: Conference Series* **966** (2018) 012062.
4. I. Lombardo, **D. Dell'Aquila** et al., *New direct investigation of the  $^{19}\text{F}(p,\alpha)^{16}\text{O}$  down to 0.2 MeV*, *Journal of Physics: Conference Series* **940** (2018) 012011.
5. **D. Dell'Aquila** et al., *Structure of  $^{10}\text{Be}$  and  $^{16}\text{C}$  nuclei via break-up reactions studied with the  $4\pi$  Chimera array*, *Journal of Physics: Conference Series* **940** (2018) 012037 ([corresponding author](#)).
6. I. Lombardo, **D. Dell'Aquila**, A. Di Leva, I. Indelicato, M. La Cognata, M. La Commara, A. Ordine, V. Rigato, M. Romoli, E. Rosato, G. Spadaccini, C. Spitaleri, A. Tumino and M. Vigilante, *New direct investigation of the  $^{19}\text{F}(p,\alpha)^{16}\text{O}$  down to 0.2 MeV*, *Journal of Physics: Conference Series* **940** (2018) 012011.
7. **D. Dell'Aquila** et al., *Structure of  $^{10}\text{Be}$  and  $^{16}\text{C}$  nuclei via break-up reactions studied with the  $4\pi$  Chimera array*, *Journal of Physics: Conference Series* **940** (2018) 012037 ([corresponding author](#)).
8. **D. Dell'Aquila** et al., *A new high-precision upper limit of direct  $\alpha$ -decays from the Hoyle state in  $^{12}\text{C}$* , *EPJ Web of Conference* **165** (2017) 01020 ([corresponding author](#)).
9. I. Lombardo, **D. Dell'Aquila** and M. Vigilante, *The role of  $^{13}\text{C}$  excited states in  $\alpha+^9\text{Be}$  reaction and scattering cross sections*, *EPJ Web of Conference* **165** (2017) 01036.
10. S.M.R. Puglia, ..., **D. Dell'Aquila** et al., *The  $^{10}\text{B}(p,\alpha)^7\text{Be}$  S(E)-factor from 5 keV to 1.5 MeV using the Trojan Horse Method*, *EPJ Web of Conferences* **165** (2017) 01042.
11. F. Gramegna, ..., **D. Dell'Aquila** et al., *Clustering in light nuclei and their effects on fusion and pre - Equilibrium processes*, *EPJ Web of Conferences* **163** (2017) 00020.
12. **D. Dell'Aquila** et al., *Investigation of the Hoyle state in  $^{12}\text{C}$  with a new hodoscope detector*, *Journal of Physics: Conference Series* **876** (2017) 012006 ([corresponding author](#)).
13. **D. Dell'Aquila** et al., *Study of the cluster structure of  $^{10}\text{Be}$  and  $^{16}\text{C}$  neutron-rich isotopes by means of intermediate energies breakup reactions*, *Journal of Physics: Conference Series* **863** (2017) 012029 ([corresponding author](#)).
14. L. Quattrocchi, ..., **D. Dell'Aquila** et al., *Study of resonances produced in light nuclei through two and multi particle correlations*, *Journal of Physics: Conference Series* **863** (2017) 010271.
15. J. Bishop, ..., **D. Dell'Aquila** et al., *High multiplicity  $\alpha$ -particle breakup measurements to study*



- $\alpha$ -condensate states, *Journal of Physics: Conference Series* **863** (2017) 012070.
16. B. Gnoffo, ..., **D. Dell'Aquila** et al., *N/Z effect on reaction mechanisms cross sections in the  $^{78}\text{Kr} + ^{40}\text{Ca}$  and  $^{86}\text{Kr} + ^{48}\text{Ca}$  collisions at 10 AMeV*, *Journal of Physics: Conference Series* **863** (2017) 012062.
  17. M. Cicerchia, ..., **D. Dell'Aquila** et al., *Pre-equilibrium emission and clustering in medium-mass nuclei:  $^{46}\text{Ti}$  from  $^{16}\text{O} + ^{30}\text{Si}$ ,  $^{18}\text{O} + ^{28}\text{Si}$ ,  $^{19}\text{F} + ^{27}\text{Al}$* , *Journal of Physics: Conference Series* **863** (2017) 012057.
  18. L. Acosta, ..., **D. Dell'Aquila** et al., *Campaign of measurements to probe the good performance of the new array FARCOS for spectroscopy and correlations*, *Journal of Physics: Conference Series* **730** (2016) 012001.
  19. I. Lombardo, **D. Dell'Aquila** and M. Vigilante, *Spectroscopy of Light Nuclei with Low Energy Nuclear Reactions*, *Journal of Physics: Conference Series* **730** (2016) 012016.
  20. **D. Dell'Aquila** et al., *Study of cluster structures in  $^{10}\text{Be}$  and  $^{16}\text{C}$  neutron-rich nuclei via break-up reactions*, *EPJ Web of Conferences* **117** (2016) 06011 (**corresponding author**).
  21. E.V. Pagano, ..., **D. Dell'Aquila** et al., *Status and perspective of FARCOS: A new correlator array for nuclear reaction studies*, *EPJ Web of Conferences* **117** (2016) 10008.
  22. G. Cardella, ..., **D. Dell'Aquila** et al., *Using CHIMERA detector at LNS for gamma-particle coincidences*, *EPJ Web of Conferences* **117** (2016) 06008.
  23. I. Lombardo, **D. Dell'Aquila**, F. Conte, L. Francalanza, M. La Cognata, L. Lamia, R. La Torre, G. Spadaccini, C. Spitaleri and M. Vigilante, *New measurement of the  $^{10}\text{B}(p, \alpha_0)^7\text{Be}$  reaction cross section at low energies and the structure of  $^{11}\text{C}$* , *EPJ Web of Conferences* **117** (2016) 09009.
  24. L. Quattrocchi, ..., **D. Dell'Aquila** et al., *Study of two- and multi-particle correlations in  $^{12}\text{C} + ^{24}\text{Mg}$  and  $^{12}\text{C} + ^{208}\text{Pb}$  reactions at  $E = 35\text{AMeV}$* , *EPJ Web of Conferences* **117** (2016) 07020.
  25. **D. Dell'Aquila** et al., *An overview of the  $^{19}\text{F}(p, \alpha_0)^{16}\text{O}$  reaction with direct method*, *Journal of Physics: Conference Series* **703** (2016) 012015 (**corresponding author**).
  26. **D. Dell'Aquila** et al., *Investigation of  $^{10}\text{Be}$  and  $^{16}\text{C}$  structure with break-up reactions at intermediate energies*, CERN-Proceedings-2015-001, Volume 1, pag. 209-213, ISBN 9789290834182 (**corresponding author**).
  27. I. Lombardo, **D. Dell'Aquila** et al., *New direct measurement of the  $^{19}\text{F}(p, \alpha_0)^{16}\text{O}$  reaction at very low energies*, CERN-Proceedings-2015-001, Volume 1, pag. 215-220, ISBN 9789290834182.
  28. I. Lombardo, L. Campajola, **D. Dell'Aquila**, M. La Commara, A. Ordine, E. Rosato, G. Spadaccini, M. Vigilante, *Study of Nuclear Structure of  $^{13}\text{C}$  and  $^{20}\text{Ne}$  by Low Energy Nuclear Reactions*, *Journal of Physics: Conference Series* **569** (2014) 012068.

#### Invited talks at international conferences:

1. Fourth International Workshop on "State of the Art in Nuclear Cluster Physics" (SOTANCP4), Galveston, Texas (USA), May 13-18 2018.
2. The 9th European Summer School on Experimental Nuclear Astrophysics, Santa Tecla (CT), Italy, September 17-24 2017.
3. XIIth Workshop on Particle Correlations and Femtoscopy (WPCF 2017), Amsterdam, Netherlands, June 12-16 2017.
4. 40<sup>th</sup> Symposium on Nuclear Physics, Cocoyoc (Mexico), 04 – 07 January 2017.
5. Zimányi School 2016, Winter School on Heavy Ion Physics, Budapest (Hungary), 05 – 09 December 2016.
6. Zimányi School 2015, Winter School on Heavy Ion Physics, Budapest (Hungary), December 07-11 2015.

#### Contributed talks at international conferences:

1. XXth Colloques GANIL 2017, Amboise (France), October 15-20 2017.
2. Nuclear Physics in Astrophysics VIII, Catania (Italy), June 18-23 2017.

3. *EPS Divisional Conference: Towards EURISOL Distributed Facility 2016*, Leuven (Belgium), October 18-21 2016.
4. *Zakopane Conference on Nuclear Physics*, Zakopane (Poland), August 28 – September 4 2016.
5. *The 2016 R-Matrix Workshop on Methods and Applications*, Santa Fe (NM, USA), June 27 – July 1 2016.
6. *Cluster'16 - 11<sup>th</sup> International Conference on Clustering Aspects of Nuclear Structure and Dynamics*, Napoli (Italy), May 23-27 2016.
7. *International Workshop on Multi facets of Eos and Clustering 2016*, Caen (France), May 9-12 2016.
8. *The 8<sup>th</sup> European Summer School on Experimental Nuclear Astrophysics*, Santa Tecla (Italia), September 13-20 2015.
9. *Nucleus Nucleus 2015*, Catania, June 21-26 2015.
10. *14<sup>th</sup> International Conference on Nuclear Reaction Mechanisms*, Varenna (Italia), June 15-19, 2015.
11. EURORIB '15, Hohenroda (Germany), June 9-13 2015.
12. *Nuclear Physics in Astrophysics VII*, York (UK), May 18-22 2015 (poster presentation).

#### Invited seminars at Universities and Laboratories:

1. Invited seminar at the Physics Department of Western Michigan University (WMU), Kalamazoo, USA (MI), January 25th 2019.
2. Invited seminar at the Facility for Rare Isotope Beams (FRIB), Michigan State University (MSU), East Lansing, USA (MI), July 20th 2017.
3. Invited seminar at the Grand Accélérateur National d'Ions Lourds (GANIL), Caen (France), May 30th 2017.
4. Invited seminar at the Department of Physics, Tokyo Institute of Technology, Tokyo (Japan), April 21st 2017.

#### Contributed talks at national conferences:

1. *102° Congresso Nazionale della Società Italiana di Fisica*, Padova (Italia), September 26-30 2016.
2. *101° Congresso Nazionale della Società Italiana di Fisica*, Roma (Italia) September 21-25 2015.

#### Referee of the following international journals:

1. **Physical Review** and **Physical Review Letters**, American Physical Society.
2. **Chemosphere**, Elsevier, ISSN: 0045-6535.
3. **Revista Mexicana de Física**.
4. **EPJ Web of Conference**, EDP Science, eISSN: 2100-014X.

#### Experimental Activities in Nuclear Physics:

1. Probing the momentum dependence of the isovector mean field potential (e15190), **National Superconducting Cyclotron Laboratory, Michigan State University**, February 2018.
2. Probing the effective mass dependence of the symmetry energy via particle ratios in  $^{40,48}\text{Ca}+^{40,48}\text{Ca}$  collisions at  $E/A=35$  and 120 MeV, **National Superconducting Cyclotron Laboratory, Michigan State University**, March 2018.
3. Study of the direct reaction  $^5\text{He}(^3\text{He},\alpha)\alpha$  by means of the Trojan Horse method at the **Ruder Boskovic Institute** of Zagreb, July 2017.

4. Measurement of clustering effects in the  ${}^6\text{Li}({}^6\text{Li},\alpha){}^8\text{Be}_{\text{gs}}$  at sub-Coulomb barrier energies at the **Ruder Boskovic Institute** of Zagreb, July 2017.
5. Participation in the SAMURAI-09 experiment at **RIKEN**, April 2017.
6. Participation in the preparation of the INDRA-FAZIA campaign at the **Grand Accélérateur National d'Ions Lourds (GANIL)**, 2017.
7. Participation in the FAZIA-COR experiment at the **INFN-Laboratori Nazionali del Sud (LNS)**, March 15-31 2017.
8. **Spokesperson** of the experiment HOYLE at the **INFN-Laboratori Nazionali del Sud (LNS)**, November 14 – December 20 2016.
9. Participation in the experiment Barriers at the **INFN-Laboratori Nazionali del Sud (LNS)**, July 2016.
10. Participation in the experiment TrYEx at the **INFN-Laboratori Nazionali del Sud (LNS)**, June 7 – 15 2016.
11. Participation in the experiment SIKO at **INFN-Laboratori Nazionali del Sud (LNS)**, October 2015.
12. Participation in the experiment ISOFAZIA at **INFN-Laboratori Nazionali del Sud (LNS)**, June 2015.
13. Participation in the experiment ACLUST2 at **INFN-Laboratori Nazionali di Legnaro (LNL)**, May 2015.
14. Participation in the experiment CLIR at **INFN-Laboratori Nazionali del Sud (LNS)** February – March 2015.
15. Test and preparation of electronic devices and detectors for the FARCOS array for the CLIR experiment at **INFN-Laboratori Nazionali del Sud (LNS)**, February 2015.
16. Measurement of the reaction  ${}^{10}\text{B}(p,\alpha){}^7\text{Be}$  in the energetic range 630 keV – 1028 keV, at **Laboratorio dell'Acceleratore** of the **University of Naples Federico II**, November 2014.
17. Direct measurement, at very low energies, of the  ${}^{19}\text{F}(p,\alpha){}^{16}\text{O}$  reaction with the AN2000 accelerator at **Laboratori Nazionali di Legnaro (LNL)**, February – March 2014.
18. Measurement of the  ${}^{19}\text{F}(p,\alpha){}^{16}\text{O}$  reaction in the energetic range  $0.540\text{MeV} \leq E_p \leq 1.034\text{MeV}$ , at **Laboratorio dell'Acceleratore** of the **University of Naples Federico II**, July 2012.
19. Test and preparation of electronic devices and detectors for the above mentioned experiment at **Laboratorio dell'Acceleratore** of the **University of Naples Federico II**, June 2012.

## **Supervision of Students**

### Mentor of the following theses on *Nuclear Physics* subjects:

1. Daniela Ruggiano, Spettroscopia di nuclei leggeri mediante reazioni nucleari indotte da  ${}^7\text{Li}$ , Università degli Studi di Napoli “Federico II”, A.A. 2016/2017 (1<sup>st</sup> degree Thesis).
2. Maria De Luca, La reazione nucleare  ${}^{14}\text{N}(d,\alpha){}^{12}\text{C}$  come sonda dello stato di Hoyle nel  ${}^{12}\text{C}$ , Università degli Studi di Napoli “Federico II”, A.A. 2015/2016 (1<sup>st</sup> degree Thesis, score: 110/110).
3. Marcello Miranda, OSCAR: un Odoscopio di Silici per le Correlazioni e le Analisi di Reazioni Nucleari, Università degli Studi di Napoli “Federico II”, A.A. 2014/2015 (1<sup>st</sup> degree Thesis, score: 110/110).
4. Felice Conte, Analisi della reazione  ${}^{10}\text{B}(p,\alpha){}^7\text{Be}$  nell'intervallo di energie incidenti 0.630 – 1.028 MeV, University of Naples “Federico II”, A.A. 2013/2014 (1<sup>st</sup> degree Thesis, score: 110/110).
5. Alessandro Verde, Studio della spettroscopia del nucleo neutron-rich  ${}^{13}\text{B}$  attraverso reazioni di break-up sequenziale del proiettile ai LNS, University of Naples “Federico II”, A.A. 2013/2014 (1<sup>st</sup> degree Thesis).

### Tutoring in university courses:

1. **Tutoring** of Classical Physics, 1<sup>st</sup> Level Degree in Geology, University of Naples “Federico II” A.Y. 2015/2016.
2. **Tutoring** of Mathematics, 1<sup>st</sup> Level Degree in Geology, University of Naples “Federico II” A.Y.



2015/2016.

Other relevant experiences:

1. Supervision of students within the program **Research Experience for Undergraduates** (REU) financed by the **National Science Foundation** (NSF) in American research institutes: Marshall Basson (Carleton College). Title of the project: *Understanding the Symmetry Energy using neutrons and protons emitted from nuclear reactions*. Research Institute: MSU-NSCL. June – August 2018.

Organization of international conferences:

1. Member of the **Local Organizing Committee** of the international conference “11th International Conference on Clustering Aspects of Nuclear Structure and Dynamics”, Napoli, Italy, May 23-27, 2016.

Outreach activities:

1. Participation in the organization and official guide for visits at the national laboratory INFN-Laboratori Nazionali del Sud of the event of scientific divulgation “XXIII Settimana della Cultura Scientifica e Tecnologica”, March 31 – April 7 2014, Catania, Italy.
2. Participation in the organization and official guide for visits at the national laboratory INFN-Laboratori Nazionali del Sud of the event of scientific divulgation “Notte Europea dei Ricercatori”, Settembre 26 2018, Catania, Italy.
3. Seminars of scientific divulgation for schools as “Esperto Esterno (External Expert)” at the Istituto Comprensivo Statale “Don Lorenzo Milani”, Misterbianco (Catania). Year: 2014.

Scientific associations:

1. Scientific association at **INFN – Catania**, as Research Associate Abroad from June 2018.
2. Scientific association at **INFN – Naples**, as Ph.D student from November 2014 to June 2018.
3. Scientific association at **INFN – LNS**, as Master degree student from November 13, 2013 to November 12, 2014.

Language Skills:

**Italian:** native speaker.

**English:** Listening: *C1*. Speaking: *C1*. Writing: *C1*. Reading: *C1*

**French:** Listening: *B1*. Speaking: *B1*. Writing: *B1*. Reading: *B1*.

Computer science skills:

C/C++ programming: *excellent*. Relevant experience in implementation of nuclear physics data unpacking tools and data analysis frameworks and data processing and storage. GNU make: *very good*. Bash Programming: *very good*. FORTRAN90/77 programming: *very good*. Experience in implementation of nuclear dynamics models.

Knowledge of the following physics tools: data analysis frameworks (ROOT, PAW), ion beam design (LISE++), energy loss calculations (LISE++, TRIM, SRIM), neural network tools (ROOT),

advanced simulation tools (GEANT3, GEANT4).

UNIX/Linux OS: *excellent*. Windows OS/Microsoft Office: *excellent*. ECDL certification (2009).