

CURRICULUM VITAE of LAURA ELISA MARCUCCI

Place and date of birth Lucca, 12/12/1971
Nationality Italian
Marital status Married, mother of two daughters

Academic history

since 01/12/2020: Full Professor, Physics Department, University of Pisa
12/2015-11/2020: Associate Professor, Physics Department, University of Pisa
01/2015: “Abilitazione Scientifica Nazionale” as Full Professor
01/2014: “Abilitazione Scientifica Nazionale” as Associate Professor
10/2002-12/2015: “Ricercatore”, Physics Department, University of Pisa
10/2000-9/2002: “Assegnista di ricerca”, Physics Department, University of Pisa
6/2000: Ph.D. in *Theoretical Nuclear Physics*, Physics Department, Old Dominion University, Norfolk, Virginia, USA
6/1996-6/2000: *Graduate Research Assistant*, Physics Department, Old Dominion University, Norfolk, Virginia, USA
11/1995: “Laurea” in physics (110/110 *summa cum laude*), Physics Department, University of Pisa

Awards

Since November 2014, **Fellow** of the **American Physical Society**, “*For advancing the understanding of electroweak interactions in nuclei, particularly for precise studies of low-energy radiative and weak capture processes of astrophysical relevance in the few-nucleon systems*”.

Winner of the “Luise Meyer-Schutzmeister” Prize for the year 2000, awarded by the *Association for Women in Science (AWIS) Educational Foundation*, as “*outstanding female graduate student in physics*”.

Publication records (from ISI/WoS, May 23, 2022)

92 articles on peer-reviewed journals
6 review articles
48 conference proceedings
3341 citations (2721 without self citations)
h-index = **33**

Talks in the period 2017-2022

1. **Theoretical study of the $\alpha + d \rightarrow {}^6\text{Li} + \gamma$ radiative capture and its implications for Big Bang Nucleosynthesis**, XVI Convegno su Problemi di Fisica Nucleare Teorica, Cortona (Italy), October 2017
2. **Few-nucleon reactions of astrophysical interest: a review**, 15th International Symposium on Nuclei in the Cosmos, LNGS-Assergi (Italy), June 2018
3. **Momentum distributions and short-range correlations in ${}^3\text{He}$ with phenomenological and chiral potentials**, The 22nd International Conference on Few-Body Problems in Physics, Caen (France), July 2018

4. **Few-body results from χ EFT** (*invited talk*), SFB 1044-Workshop: Electromagnetic observables for low-energy nuclear physics, Mainz (Germany), October 2018
5. **The PTOLEMY experiment: an opportunity for nuclear physics** (*invited talk*), International Conference on Cosmic Neutrino Background Detection and Dark Matter Searches with PTOLEMY, LNGS-Assergi (Italy), November 2018
6. **Nuclear reactions of astrophysical interest: *ab-initio* studies within chiral EFT** (*invited talk*), International Nuclear Physics Conference - INPC 2019, Glasgow (UK), July 2019
7. **Momentum Distributions and Short-Range Correlations in Few-Nucleon Systems Using Realistic Interactions**, International Nuclear Physics Conference - INPC 2019, Glasgow (UK), July 2019
8. ***Ab-initio* studies of few-nucleon systems: Recent progress and applications**(*invited talk*), 106^o Congresso Nazionale della Società Italiana di Fisica - SIF106, virtual conference, September 2020
9. **Few-nucleon radiative captures in chiral effective field theory**(*invited talk*), MITP Virtual Workshop: Uncertainties in Calculations of Nuclear Reactions of Astrophysical Interest, December 2020
10. **Recent progress in *ab-initio* studies of light nuclei and few-nucleon reactions** (*invited talk in plenary session*), 107^o Congresso Nazionale della Società Italiana di Fisica - SIF107, virtual conference, September 2021
11. **Momentum Distributions and Short-Range Correlations in Few-Nucleon Systems with Local and Non-Local Interactions** (*invited talk*), 3rd Workshop on Quantitative Challenges in EMC and SRC Research, virtual workshop, March 2021
12. **Recent progress in *ab-initio* studies of light nuclei and few-nucleon reactions**, *invited online colloquium* at the Univ. of Ljubljana, January 2022
13. ***Ab-initio* studies of light nuclei and few-nucleon reactions of astrophysical interest** (*invited talk*), Topical meeting of IReNA - FA1 and ChETEC-INFRA “Nuclear reaction measurements in Underground Laboratories”, April 2022

Conferences and Workshops organization

1. **XI Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2006
2. **The 20th European Conference on Few-Body Problems in Physics**, Pisa (Italy), September 2007
3. **Electron-Nucleus Scattering X**, Marciana Marina (Isola d’Elba - Italy), June 2008
4. **XII Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2008
5. Leader of the *working group* for the *hep* reaction at the workshop **Solar Fusion Cross Sections for the pp chain and CNO cycle**, INT, University of Washington, Seattle, USA, January 2009, (see E.G. Adelberger *et al.*, Rev. Mod. Phys. **83**, 195 (2011))
6. **Electron-Nucleus Scattering XI**, Marciana Marina (Isola d’Elba - Italy), June 2010
7. **XIII Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), April 2011
8. **Electron-Nucleus Scattering XII**, Marciana Marina (Isola d’Elba - Italy), June 2012
9. **XIV Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2013
10. **Electron-Nucleus Scattering XIII**, Marciana Marina (Isola d’Elba - Italy), June 2014
11. **CHIRAL DYNAMICS 2015 - The 8th International Workshop on Chiral Dynamics** (*Co-chair of the organizing committee*), Pisa (Italy), June 2015
12. **EXOTIC 2015 - Re-writing Nuclear Physics textbooks: 30 years of radioactive ion beam physics**, Pisa (Italy), July 2015
13. **XV Convegno su Problemi di Fisica Nucleare Teorica**, Pisa (Italy), April 2016

14. **Lepton-Nucleus Scattering XIV**, Marciana Marina (Isola d'Elba - Italy), June 2016
 15. **Summer School 2017: Rewriting Nuclear Physics Textbooks: Basic nuclear interactions and their link to nuclear processes in the cosmos and on earth**, Pisa (Italy), July 2017
 16. **XVI Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2017
 17. **Lepton Interactions with Nucleons and Nuclei-XV**, Marciana Marina (Isola d'Elba - Italy), June 2019
 18. **Summer School 2019: Rewriting Nuclear Physics Textbooks**, Pisa (Italy), July 2019
 19. **XVII Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2019
 20. **XVIII Convegno su Problemi di Fisica Nucleare Teorica**, Pisa (Italy), October 2021
 21. **3rd International Conference on Quantum Gases, Fundamental Interactions, and Cosmology - QFC2022**, Pisa, October 2022
- Editor for the *proceedings* of the Cortona workshop series and of the international conference *Chiral Dynamics 2015*
 - Member of the **International Program Committee** for the *15th International Symposium on Nuclei in the Cosmos (NIC2018)*
 - Member of the **International Advisory Committee** for the *CHIRAL DYNAMICS 2018 - The 9th International Workshop on Chiral Dynamics* and for the *CHIRAL DYNAMICS 2021 - The 10th International Workshop on Chiral Dynamics*
 - Member of the **International Advisory Committee** for the *International Nuclear Physics Conference - INPC 2019*

Editorial and referee activity

- March 2018 - May 2022: **Specialty Chief Editor** for the journal *Frontiers in Physics - Nuclear Physics Section*, ISSN: 2296-424X. Resignation given as a consequence of irreconcilable divergences with the publisher on the journal and section policy.
- **Referee for the evaluation of grant proposals** for the *Department of Energy (USA)* and the *Natural Sciences and Engineering Research Council (Canada)*
- **Referee for the VQR 2011-2014 and VQR 2015-2019**
- **Referee for the following journals:** Astronomy and Astrophysics, Astrophysical Space Science, European Physical Journal A, Few-Body Systems, Journal of Physics G: Nuclear and Particle Physics, Indian Journal of Physics, International Journal of Modern Physics E, Modern Physics Letters A, Nuclear Physics A, Physical Review C, Physical Review Letters.

Administrative duties

- Member of the **commissione scientifica d'area 02 - scienze fisiche**, University of Pisa, 2009-2012
- Member of the **comitato ordinatore della Scuola di Specializzazione in Fisica Medica**, University of Pisa, 2009-2014
- Member of the **giunta** of the Physics Department at the University of Pisa, 2013-2015
- Member of the **commissione didattica paritetica** of the Physics Department at the University of Pisa, 2013-2015
- **Local Coordinator** for the INFN Pisa branch of the research project **Few-Body Systems: Structure and Reactions with Light Nuclei (FBS)**, 2014-2020

- Member of the **commissione per l'accesso aperto alla letteratura scientifica** of the University of Pisa, 2018-2020
- Member of the **collegio del dottorato** of the Physics Department at the University of Pisa, since December 2018
- **Local Coordinator** of the theory group at the INFN Pisa branch, 2020-2021
- **Vice-director** of the Physics Department at the University of Pisa, since November 2020

Teaching Activity

Teaching Activity at the University of Pisa since 2002

Physics major:

“Esercitatore” of the course **Fisica 1**, academic years 2002/2003 – 2005/2006, 2009/2010, 2010/2011, 2016/2017

Co-lecturer of the course **Fisica 3**, academic years 2015/2016 and 2016/2017

Lecturer of the course **Reazioni nucleari di interesse astrofisico**, academic years 2004/2005–2006/2007, 2009/2010, 2011/2012–2016/2017. Since the year 2017/2018, I have become co-lecturer, due to other teaching duties

Lecturer of the course **Fisica 1**, since the academic year 2017/2018

Others:

Lecturer of the course **Fisica**, *laurea* in Computer Science, academic years 2006/2007 and 2007/2008

Co-Lecturer of the course **Fisica 1 + Esercitazioni**, *laurea* in Chemistry, academic year 2016/2017

Lecturer of the course **Complementi di fisica: modellistica nucleare I**, *scuola di specializzazione* in Medical Physics, academic years 2009/2010–2012/2013, and 2016/2017

Teaching activity at other institutions

Lecturer for the course **Nuclear Astrophysics** at the Gran Sasso Science Institute - Center of Advanced Studies - (L'Aquila), for the PhD course in Astroparticle Physics, academic years 2013/2014–2016/2017.

Thesis Supervision

Academic year 2003/2004, Erminia Bressi, *Laurea triennale* - Thesis: **Studio teorico della reazione $p + d \rightarrow {}^3\text{He} + \gamma$**

Academic year 2005/2006, Maria Piarulli, *Laurea triennale* - Thesis: **Studio del fattore di forma del nucleo di ${}^4\text{He}$**

Academic year 2005/2006, Valentina Fogli, *Laurea triennale* - Thesis: **Studio del fattore di forma magnetico dei nuclei con $A = 3$**

Academic year 2007/2008, Maria Piarulli, *Laurea magistrale* - Thesis: **Cattura muonica su nucleo di deuterio**

Academic year 2009/2010, Marco Mariti, *Laurea triennale* - Thesis: **Gli operatori di carica e corrente nucleare**

Academic year 2015/2016, Alessandro Grassi, *Laurea magistrale* - Thesis: **Multipotential analysis of the radiative capture reaction $\alpha + d \rightarrow {}^6\text{Li} + \gamma$**

Academic year 2015/2016, Luca Genchi, *Laurea triennale* - Thesis: **Il deutone**

Academic year 2016/2017, Silvia Benegiano, *Laurea triennale* - Thesis: **Studio teorico della reazione**
 $p + p \rightarrow d + e^+ + \nu_e$

Academic year 2016/2017, Leonardo Barontini, *Laurea triennale* - Thesis: **Alla scoperta del nucleo atomico: dall'esperimento di Rutherford alla formula semi-empirica di massa**

Academic year 2016/2017, Ambra Frediani, *Laurea triennale* - Thesis: **Studio del fattore di forma nucleare**

Academic year 2017/2018, Luana Modafferi, *Laurea triennale* - Thesis: **La nucleosintesi al Big Bang: reazioni nucleari e abbondanze primordiali**

Academic year 2017/2018, Alessia Nannini, *Laurea magistrale* - Thesis: **Non-Symmetrized Hyper-spherical Harmonics for a three-body system**

Academic year 2019/2020, Ylenia Capitani, *Laurea magistrale* - Thesis: **Il metodo delle armoniche ipersferiche per lo studio del continuo**

Academic year 2020/2021, Laura Ceccarelli, *Laurea magistrale* - Thesis: **The reaction $\mu^- + d \rightarrow n + n + \mu_n u$ in chiral effective field theory**

Academic year 2019/2020, Alex Gnech, *PhD at the GSSI* - Thesis: **Theoretical calculation of nuclear reactions of interest for Big Bang Nucleosynthesis**

Public outreach

19/05/2011, Liceo Scientifico F. Buonarroti, Pisa. Seminar: *A 100 anni dalla scoperta del nucleo: la fisica nucleare, principi e applicazioni*

16/07/2011, Fondazione Silvestro Marcucci ONLUS, Quiesa di Massarosa (LU). Seminar: *A 100 anni dalla scoperta del nucleo: la fisica nucleare, principi e applicazioni*

23/01/2013, Liceo Artistico A. Passaglia, Lucca. Seminar: *La ricerca in fisica oggi: una "chiacchierata"*

21/01/2015, Scuola Media C. Del Prete, Lucca. Seminar: *Il sole, le stelle, l'universo ... e noi: una "chiacchierata"*

21/08/2015, Fondazione Silvestro Marcucci ONLUS, Quiesa di Massarosa (LU). Seminar: *All'improvviso le stelle*, in the occasion of the inaugural day of the painting exhibition of **Antonio Possenti** with the title "All'improvviso le stelle"

28/10/2015, Istituto Tecnico Industriale A. Meucci, Firenze. Seminar: *Il sole, le stelle, l'universo ... e noi: una "chiacchierata"*, (within the project Pianeta Galileo 2015)

07/02/2017, Polo tecnologico A. Manetti - P. Porciatti, Grosseto. Seminar: *Il "nucleare" che fa "paura": a più di 100 anni dalla scoperta del nucleo* (within the project Pianeta Galileo 2016)

01/03/2017, Istituto delle Suore Mantellate, Pistoia. Seminar: *Il "nucleare" che fa "paura": a più di 100 anni dalla scoperta del nucleo* (within the project Pianeta Galileo 2016)

03/03/2017, Auditorium of the "Fondazione Banca del Monte di Lucca". Seminar: *"Il cielo stellato sopra di me" (I. Kant): un viaggio alla scoperta delle stelle*, during the workshop "E le stelle stanno a guardare ...", organized by the *Federazione Italiana Donne Arti Professioni Affari* (FIDAPA)

10/12/2018, Aula Magna Fratelli Pontecorvo, Pisa. Seminar: *La fisica nucleare dal 1909 al 1934*, within the event "Enrico Fermi: 80 anni dal Nobel", organized by the *Centro Pontecorvo* of the Physics Department of the University of Pisa, and the local branch of the *Associazione Italiana Studenti in Fisica* (AISF)

25/03/2022, Liceo Scientifico A. Vallisneri, Lucca. Seminar: *Il "nucleare" che fa "paura": conoscere per decidere*

26/04/2022, Liceo F. Enriques, Livorno. Seminar: *"Il cielo stellato sopra di me" (I. Kant): un viaggio alla scoperta delle stelle* (within the project Pianeta Galileo 2021-2022)

29/04/2022, Scuole paritarie D. Lighieri, Firenze. Seminar: *“Il cielo stellato sopra di me” (I. Kant): un viaggio alla scoperta delle stelle* (within the project Pianeta Galileo 2021-2022)

Pisa, May 23, 2022