Paolo Finelli

Last Update: June 27, 2017

PERSONAL INFORMATIONS

Birth Date : 01/03/1975
Birth Place: Bologna

ADDRESSES

Home:
Via di Villa Pardo 4
Bologna, 40134 (BO)

Office:
University of Bologna
Department of Physics
Bologna, 40126, Via Irnerio 46
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WEBSITE

Personal web-site: http://www.fisicanucleare.it
Institutional web-site: http://www.unibo.it/docenti/paolo.finelli

RESERCH AND EXPERIENCE

Ricercatore Confermato (Assistant Professor)
Department of Physics
University of Bologna
October 2005 – Now

Post-Doc Position, T39 Theory Group
Department of Physics
Technical University of München
October 2004 – October 2005

Post-Doc Position, Theory Group
ECT*, European Center for Theoretical Nuclear Physics**
April 2003 – October 2004

EDUCATION

Ph. Degree in Physics, March 2003.
From a relativistic mean-field approach towards a nuclear structure description constrained by QCD and chiral symmetry
Advisors: Prof. Giovanni Carlo Bonsignori and Prof. Dr. Dario Vretenar
University of Bologna, Italy

M. Sc. Degree in Physics, December 1999.
Violazione della parità nella diffusione di elettroni e misura della distribuzione dei neutroni nei nuclei esotici
(Parity violation effects in polarized elastic electron scattering and measure of neutron density distributions in exotic nuclei)
Advisors: Prof. Giovanni Carlo Bonsignori, Prof. Dr. Dario Vretenar and Dr. Alberto Ventura
University of Bologna and ENEA, Italy

Teaching

Teaching Assistant for the following courses at the Department of Electrical Engeneering of the University of Bologna

- **2001**: *Classical Mechanics*
- **2002**: *Electrodynamics*
- **2003**: *Classical Mechanics/Electrodynamics*

Teaching Assistant for the following courses at the Department of Physics of the University of Bologna

- **2006**: *Nuclear Physics* (first semester), *Introduction to Nuclear and Subnuclear Physics* (second semester)
- **2007**: *Nuclear Physics* (first semester)

Since **2008** Teacher of *Nuclear Physics* course (6 credits / 52 hours).
See `http://www.fisicanucleare.it` for more informations

Since **2014** Teacher of *Principles and Applications of Nuclear and Subnuclear Physics* course (6 credits / 48 hours).

Advisor for the following dissertations (Bachelor's degree)

- **2006** Emanuele Poggioli, *Nucleosintesi di elementi con* $A \leq 60$,
- **2007** Matteo Vorabbi, *Applicazioni di modelli di campo medio relativistico alla fisica dei nuclei esotici*,
- **2008** Alessandro Marani, *Stelle di neutroni*,
- **2016** Luca Moretti, *Modello di Skyrme-Hartree-Fock*,
- **2017** Daniele Massaro, *Introduzione al modello a bosoni interagenti*,

and (Master Science's degree)

- **2009** Nicoló Masi, *Applicazioni di dinamica chirale nel mezzo nucleare*,
- **2011** Matteo Vorabbi, *Modelli fenomenologici per lo studio del diagramma di fase dell'interazione forte*,
- **2013** Stefano Maurizio, *Nuclear superconductivity from realistic forces*,
- **2015** Simone Casadei, *Stato di Hoyle e principio antropico*

Skills

- Languages:
  - Italian : mother tongue
  - English : fluently
  - French : basic
- Operative Systems: Microsoft Windows, Unix and Linux (System Administrator experience), Mac OsX
- Programming: Fortran 77/90, C, C++, Python, Mathematica, Matlab, Maple and HTML
- Text writing: LaTeX and Office suite programs

Publications

1. D. Vretenar, P. Finelli, A. Ventura, G. A. Lalazissis, and P. Ring, "Parity violating elastic electron scattering and neutron density distributions in the relativistic Hartree-Bogoliubov model," *Phys. Rev. C***61**, *64307 (2000)*.
   32 citations from *ISI Web of Knowledge*.

2. D. Vretenar, P. Finelli, A. Ventura, G. A. Lalazissis, and P. Ring, "Parity violating elastic electron scattering and neutron density distributions in the Relativistic Hartree-Bogoliubov model," Conference Proceedings, *Bologna 2000: Structure of the Nucleus at the Dawn of the Century*, 93, *World Scientific (2001)*.

3. T. Nikšić, D. Vretenar, P. Finelli, and P. Ring, "Relativistic Hartree-Bogoliubov model with density-dependent meson-nucleon couplings," *Phys. Rev. C***66**, *24306 (2002)*.
   210 citations from *ISI Web of Knowledge* (**Topcite 100**).

4. D. Vretenar, P. Ring, G. A. Lalazissis, T. Nikšić, P. Finelli, and N. Paar, "Relativistic mean field and RPA description of exotic nuclear structure", Conference Proceedings, *Frontiers of Nuclear Structure*, 211, *APS (2002)*.

5. P. Finelli, N. Kaiser, D. Vretenar, and W. Weise, "Nuclear many-body dynamics constrained by QCD and chiral symmetry," *Eur. Phys. J. A***17**, *573 (2003)*.
   39 citations from *SLAC*.

6. P. Finelli, D. Vretenar, N. Kaiser, e W. Weise, "Nuclear many-body dynamics constrained by QCD and chiral symmetry", Conference Proceedings, *IX Convegno su Problemi di Fisica Nucleare Teorica*, 223, *World Scientific (2003)*.

7. D. Vretenar, T. Nǐksić, P. Ring, N. Paar, G. A. Lalazissis, and P. Finelli, "Relativistic Hartree-Bogoliubov and QRPA description of exotic nuclear structure," *Eur. Phys. J. A***20**, *75 (2004)*.
   2 citations from *SCOPUS*.

8. P. Finelli, N. Kaiser, D. Vretenar, and W. Weise, "Relativistic nuclear point-coupling model constrained by QCD and chiral symmetry," *Nucl. Phys. A***735**, *449 (2004)*.
   64 citations from *SLAC* (**Topcite 50**).

9. P. Finelli, D. Vretenar, N. Kaiser, and W. Weise, "Nuclear density functional constrained by low-energy QCD", Conference Proceedings, *X Convegno su Problemi di Fisica Nucleare Teorica*, 045, *World Scientific (2005)*. 1 citation from *SLAC*.

10. P. Finelli, N. Kaiser, D. Vretenar, and W. Weise, "Relativistic nuclear energy density functional constrained by low-energy QCD," *Nucl. Phys. A***770**, *1 (2006)*.
    57 citations from *ISI Web of Knowledge* (**Topcite 50**).

11. P. Finelli, "Description of spin and isospin collective excitations with a nuclear energy density functional constrained by low-energy QCD," *Nucl. Phys. A***788**, *284 (2007)*.
    2 citations from *SCOPUS*.

12. P. Finelli, N. Kaiser, D. Vretenar, and W. Weise, "Chiral pion-nucleon dynamics in finite nuclei: Spin-isospin excitations," *Nucl. Phys. A***791**, *57 (2007)*.
    17 citations from *ISI Web of Knowledge*.

13. P. Finelli, N. Kaiser, D. Vretenar, and W. Weise, "In-medium chiral SU(3) dynamics and hypernuclear structure," *Phys. Lett. B***658**, *90 (2007)*.
    11 citations from *SCOPUS*.

14. P. Finelli, "Hypernuclei and in-medium chiral dynamics," *Eur. Phys. J. ST***156***, 183 (2008).*
    3 citations from *ISI Web of Knowledge*.

15. P. Finelli, "Applications of in-medium chiral dynamics to nuclear structure," Conference Proceedings, *Recent Progress in Many-Body Theories 14*, 176, *World Scientific (2008).*

16. P. Finelli, "Applications of in-medium chiral dynamics to nuclear structure", Conference Proceedings, *Zakopane 2008*, *Acta Phys. Pol. B***40***, 665 (2009).*

17. P. Finelli,"Relativistic models for nuclear structure and low-energy QCD", Conference Proceedings, *XI Convegno su Problemi di Fisica Nucleare Teorica, J. Phys. Conf. Ser.* **168***, 012010 (2009).*

18. P. Finelli, "Applications of in-medium SU(3) chiral dynamics: hypernuclear structure", Conference Proceedings, *Particles and Nuclei International Conference 18*, 423, *Elsevier (2009).*

19. P. Finelli, "Recent Developments about Lambda-N spin-orbit interaction in hypernuclei", Conference Proceedings, *Nuclear and Structure Dynamics 09*, 275, *AIP (2009).*

20. P. Finelli, N. Kaiser, D. Vretenar, and W. Weise, "Hypernuclear single particle spectra based on in-medium chiral SU(3) dynamics", *Nucl. Phys. A***831***, 163 (2009).*
    14 citations from *SCOPUS*.

21. P. Finelli, "Hypernuclear spectra from in-medium chiral dynamics: a refined fit analysis", *Nucl. Phys. A***835***, 418 (2010).*
    1 citation from *SLAC* archive.

22. G. Co', V. De Donno, P. Finelli, M. Grasso, M. Anguiano, A. M. Lallena, C. Giusti, A. Meucci, and F. D. Pacati, "Mean-field calculations of exotic nuclei ground states", *Phys. Rev. C***85***, 024322 (2012).*
    8 citations from *SLAC* archive.

23. P. Finelli, T. Nikšić, and D. Vretenar, "Nuclear Pairing from Chiral Pion-Nucleon Dynamics: Applications to Finite Nuclei", *Phys. Rev. C***86***, 034327 (2012).*

24. P. Finelli, "Nuclear Pairing from Chiral Pion-Nucleon Dynamics: latest results and relevant issues", *PTP Supplement* **196***, 421 (2012).*

25. P. Finelli, "Nuclear Pairing From Bare Interaction: Two and Three-Body Chiral Forces", Conference Proceedings, *Nuclear and Structure Dynamics 12*, 250, *AIP (2012).*

26. A. Meucci, C. Giusti, F. D. Pacati, M. Vorabbi, and P. Finelli, "Elastic and quasi-elastic electron scattering off nuclei with neutron excess", *Phys. Rev. C***87***, 054620 (2013).*
    14 citations from *ISI Web of Knowledge*.

27. A. Meucci, M. Vorabbi, C. Giusti, F. D. Pacati, and P. Finelli, "Elastic and quasi-elastic electron scattering on the N = 14, 20, and 28 isotonic chains", *Phys.Rev. C***89***, 034604 (2014).*
    6 citations from *ISI Web of Knowledge*.

28. A. Meucci, M. Vorabbi, C. Giusti, and P. Finelli, "Neutron density distribution and neutron skin thickness of ^{208}Pb", *Phys. Rev. C***90***, 027301 (2014).*

3 citation from *ISI Web of Knowledge*.

29. A. Meucci, M. Vorabbi, C. Giusti, F. D. Pacati, and P. Finelli, "Elastic and quasi-elastic electron scattering off isotopic and isotonic chains", *J. Phys. Conf. Ser.* **527**, *012024 (2014)*.

30. S. Maurizio, P. Finelli, and J.W. Holt, "Nuclear pairing from microscopic forces: singlet channels and higher-partial waves", *Phys.Rev. C***90**, *044003 (2014)*.
6 citations from *ISI Web of Knowledge*.

31. S. Maurizio, J.W. Holt and P. Finelli, "Numerical Analysis of the 1S0 Pairing Gap in Neutron Matter", Conference Proceedings, *INPC2014*, DESY-PROC-2014-04/66

32. P. Finelli, S. Maurizio, and J.W. Holt, "Nuclear Pairing from Two-body Microscopic Forces: Analysis of the Cooper Pair Wavefunctions", Conference Proceedings, *ICNFP2014*, EPJ Web Conf. **95**, 04021 (2015).

33. M. Vorabbi, A. Meucci, C. Giusti, and P. Finelli, "Parity-Violating Asymmetry for 208Pb", Conference Proceedings, *PAVI14*, *J. Phys. Conf. Ser.*, accepted (2016).

34. M. Vorabbi, P. Finelli,and C. Giusti,"Theoretical optical potential derived from nucleon-nucleon chiral potentials," *Phys. Rev. C***93**, *034619 (2016)*.
1 citation from *ISI Web of Knowledge*.

35. M. Vorabbi, P. Finelli, and C. Giusti, "Theoretical Optical Potential Derived From Chiral Potentials," Conference Proceedings, *35-th International Workshop on Nuclear Theory (IWNT-35)*, *Nucl. Theory* **35**, *93 (2016)*.

36. P. Finelli, "Nuclear pairing from microscopic forces: singlet channels and higher-partial waves.", Conference Proceedings, *The Modern Physics of Compact Stars 2015*, *POS (2016)*.

37. P. Finelli, M. Vorabbi, and C. Giusti, "Chiral Nucleon-Nucleus Potentials at N3LO," Conference Proceedings, *Theoretical Nuclear Physics in Italy*, *J. Phys. Conf. Ser.*, accepted (2017).

38. M. Vorabbi, P. Finelli, and C. Giusti, "Optical potentials derived form nucleon-nucleon chiral potentials at N4LO," submitted to *Phys. Rev. C (2017)*.

Schools and Conferences

1. *Bologna 2000: Structure of the Nucleus at the Dawn of the Century*
   Bologna (Italy), 29 May - 3 June 2000
   `Poster`
2. Nato Advanced Research Workshop: *The Nuclear Many-Body Problem*
   Brijuni National Park (Croatia), 2 - 5 June 2001
3. *ECT** Workshop: *Current Theoretical and Experimental Investigations of the Nuclear Many-Body Problem and Applications*
   Trento (Italy), 24 September - 3 October 2001
   `Talk`
4. CINECA course, *Introduction to C++*
   Bologna (Italy), 26 - 30 November 2001
5. Varenna Summer School (CLIII course): *From Nuclei and Their Constituents to Stars*
   Varenna (Italy), 6 - 16 August 2002
6. *3rd International Balkan School on Nuclear Physics*
   Thessaloniki (Greece), 18 - 24 September 2002
   `Talk`
7. *IX Convegno su Problemi di Fisica Nucleare Teorica*
   Cortona (Italy), 9 - 12 October 2002
   `Talk`
8. 307 WE-Heraeus-Seminar: *Relativistic Structure Models for the Physics of Radioactive Nuclear Beams*
   Bad Honnef (Germany), 12 - 16 May 2003
   `Talk`
9. *ECT** Doctoral Training Programme: *Nuclear Structure*
   Trento (Italy), May - October 2003
   `Talks`
10. *ECT** Workshop: *Role of Pions and Deltas in Nuclear Many-Body Dynamics (collaboration meeting)*
    Trento (Italy), 10 - 15 November 2003
    `Talk`
11. *DPG Nuclear Physics Spring Meeting*
    Köln (Germany), 8 - 12 March 2004
    `Talk`
12. *ECT** Doctoral Training Programme: *Neutrino Physics*
    Trento (Italy), May - October 2004
13. *ECT** Workshop: *International Workshop on Novel Approaches to the Nuclear Many-Body Problem*
    Trento (Italy), 6 - 17 September 2004
    `Talk`
14. *INT Workshop on Relativistic Density Functional Theory for Nuclear Structure*
    Seattle (USA), 20 - 24 September 2004
    `Talk`
15. *X Convegno su Problemi di Fisica Nucleare Teorica*
    Cortona (Italy), 6 - 9 October 2004
    `Talk`
16. *DPG Nuclear Physics Spring Meeting*
    Berlin (Germany), 4 - 9 March 2005
    `Talk`
17. *INT Workshop: Towards a Universal Density Functional for Nuclei*
    Seattle (USA), 20 - 25 September 2005
    `Talk`
18. *DPG Nuclear Physics Spring Meeting*
    München (Germany), 20 - 24 March 2006
    `Talk`

19. *COMEX 2, Collective Motion in Nuclei under Extreme Conditions*
    Sankt Goar (Germany), 20 - 23 June 2006
    `Talk`
20. *IX International Conference on Hypernuclear and Strange Particle Physics*
    Mainz (Germany), 10 - 14 October 2006
    `Talk`
21. *DPG Nuclear Physics Spring Meeting*
    Giessen (Germany), 12 - 16 March 2007
    `Talk`
22. *Theoretical Nuclear Physics School: "Exotic Nuclei: New Challenges"*
    Les Houches (France), 7 - 18 May 2007
    `Invited Talk`
23. *Scuola di Fisica Nucleare, Raimondo Anni*
    Otranto (Italy), 28 May - 2 June 2007
    `Invited Talk`
24. *14th International Conference on Recent Progress in Many-Body Theories*
    Barcelona (Spain), 16 - 20 July 2007
    `Poster`
25. *DPG Nuclear Physics Spring Meeting*
    Darmstadt (Germany), 10 - 14 March 2008
    `Talk`
26. *Zakopane Conference on Nuclear Physics*
    Zakopane (Poland), 1 - 7 September 2008
    `Talk`
27. *XII Convegno su Problemi di Fisica Nucleare Teorica*
    Cortona (Italy), 8 - 10 October 2008
    `Talk`
28. *International Conference on Particles and Nuclei (PANIC08*
    Eilat (Israel), 9 - 14 November 2008
    `Talk`
29. *European Nuclear Physics Conference*
    Bochum (Germany), 16 - 20 March 2009
    `Invited Talk`
30. *Nuclear Structure and Dynamics*
    Dubrovnik (Croatia), 4 - 8 May 2009
    `Talk`
31. *ECT** Workshop: *The Lead Radius Experiment and Neutron Rich Matter in Astrophysics and in the Laboratory*
    Trento (Italy), 3 - 7 August 2009
    `Talk`
32. *X International Conference on Hypernuclear and Strange Particle Physics*
    Tokai (Japan), 14 - 18 September 2009
    `Talk`
33. *Elba XI Workshop Electron-Nucleus Scattering*
    Elba (Italia), 21 - 25 June 2010
    `Invited Talk`
34. Ψ_k *2010*
    Berlin (Germany), 12 - 16 September 2010
35. *SPS Joint Annual Meeting*
    Lausanne (Switzerland), 15 - 17 June 2011
36. YKIS2011 Symposium: *Frontier Issues in Physics of Exotic Nuclei*
    Kyoto (Japan), 11 -15 October 2011
    `Talk`

37. *Nuclear Structure and Dynamics II*
    Opatija (Croatia), 9 - 13 July 2012
    `Talk`
38. *XI International Conference on Hypernuclear and Strange Particle Physics*
    Barcelona (Spain), 1 - 5 October 2012
39. *INPC2013*
    Florence (Italy), 2 - 7 June 2013
    `Talk`
40. *EuroSciPy*
    Bruxelles (Belgium), 21 - 24 August 2013
41. *Selected Topics in Nuclear and Atomic Physics*
    Fiera di Primiero (Italy), 30 September 30 - 4 October 2013
    `Invited Lecturer`
42. *3rd International Conference on New Frontiers in Physics*
    Crete (Greece), 28 July - 6 August 2014
    `Talk`
43. *International Conference on Particles and Nuclei (PANIC14)*
    Hamburg (Germany), 25 - 29 August 2014
    `Talk`
44. *The Modern Physics of Compact Stars and Relativistic Gravity*
    Yerevan (Armenia), 30 September - 03 October 2015
    `Talk`
45. *TNPI2016 - XV Conference on Theoretical Nuclear Physics in Italy*
    Pisa (Italy), 20 - 22 April 2016
    `Talk`
46. *Compact Stars in the QCD phase diagram V*
    GSSI and LNGS (Italy), 23 - 27 May 2016

47. *International Symposium on Neutron Star Matter*
    Sendai (Japan), 21 - 24 November
    `Talk`

Paolo Finelli

Collaborators

- Department of Physics, University of Zagreb:
  Dario Vretenar, Full Professor,
  `vretenar@phy.hr`
  Tamara Niǩsiǩ, Associate Professor,
  `niksic@phy.hr`
- Department of Physics, Texas A & M:
  Jeremy W. Holt, Post-Doc,
  `jholt@ph.tum.de`
- Department of Physics, University of Pavia:
  Carlotta Giusti, Associate Professor,
  `giusti@pv.infn.it`
- TRIUMF, Canada:
  Matteo Vorabbi, Researcher,
  `vorabbi@pv.infn.it`
- Institute of Physics, University of Bern:
  Stefano Maurizio, PhD,

More informations

- Referee for *Nucl. Phys.* **A**, *Eur. Phys. J.* **A**, Nuovo Cimento, Phys. Rev. **C**
- Local Reference of INFN *Iniziativa specifica* Manybody
- Winner of a grant for *Scientific, Cultural and Technological cooperation between Italy and Croatia*, 2009-2010

Visiting scientist

- Department of Physics, Technical University of Munich, Germany
  - **2006**: from 01/01 to 31/07 (not continuously)
  - **2008**: from 15/04 to 15/07 (Marco Polo grant)
  - **2010**: from 01/06 to 31/07
- Institut de Physique Nucleaire (Orsay) **2009**: from 01/03 to 30/06
- Lausanne/Bern, Department of Physics (Switzerland) **2011**: from 01/02 to 30/06