Curriculum vitae et studiorum of Pietro Giudice

Present Address:
Institut fuer Theoretische Physik
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Personal data:
Citizenship: Italian
Place of Birth: Lamezia Terme (Italy)
Date of birth: 29th May 1977
Marital Status: Single, no children
Mother tongue: Italian
Foreign languages: English (fluent), German (elementary)
Current Position: Postdoctoral Research (Muenster, Germany)

Education and Academic Degrees:

- 1996 - 2002: undergraduate studies in Physics at the University of Calabria (Italy)
- 24/July/2002: Laurea cum laude in Physics; Thesis: "SU(2) gauge theory on the lattice at finite temperature and non-zero density", supervised by Prof. Alessandro Papa
- 1/November/2002 - 30/November/2005: PhD studies in Physics at the University of Calabria (Italy)
- 23/February/2005 - 24/June/2005: Academic visitor in the Department of Physics, University of Wales Swansea, supervised by Prof. Simon Hands
- 15/December/2005: PhD in Physics; Thesis: "Gauge theories on the lattice at finite temperature and density"
- 1/December/2005 - 30/September/2008: Postdoctoral Position (assegno di ricerca) in University of Torino (Italy)
- 1/October/2008 - 30/September/2010: Research Fellow in Trinity College Dublin (Ireland)
- 1/October/2010 - 31/May/2013: Postdoctoral Research Officer in Swansea University (UK)
- 1/June/2013 - Present: Research Fellow (Wissenschaftliche Mitarbeiter) in Muenster University (Germany)

Teaching experience:

- "Small group problem class": Tutor for 1st year physics students (Swansea University - second semester 2011/12)
- "Introductory Modelling Physical Systems": Tutor for 3rd year physics students (Swansea University - second semester 2011/12)
- Mentor of a first year PhD student (Swansea University - 2011/12)
- "Small group problem class": Tutor for 2st year physics students (Swansea University - first semester 2012/13)
- "Small group problem class": Tutor for 2st year physics students (Swansea University - second semester 2012/13)
- "Quantum Theory": Tutor for 3rd year physics students (Muenster University - first semester 2013/14)
- "Introduction to Quantum Mechanics": Tutor for 2rd year physics students (Muenster University - second semester 2013/14)
- Mentor of a third year PhD student (Muenster University - 2013/14)
- "Introduction to Field Theory": Tutor for 4th year physics students (Muenster University - first semester 2014/15)
- "Introduction to the Standard Model of particle physics": Tutor for 4th year physics students (Muenster University - second semester 2014/15)
- Mentor of a third year PhD student (Muenster University - 2014/15)

Awards and distinctions:

- The proposal "Study of non perturbative properties of strong interactions", submitted for the funding initiative of the Italian Government, Futuro in Ricerca - FIRB (Future in Research) sponsored by the Ministry of Education, University and Research, was scored by referees with 87 points out of 100 and then it was awarded by the "Universita' della Calabria" (Calabria University (Italy)) with 5000 euros (July 2012)
- Italian National Scientific Qualification (abilitazione scientifica nazionale) to become Associate Professors obtained the 8th of January 2014

International Research Projects:

- Title: "Pushing the Strong Interaction past its Breaking Point: QCD in the quark-gluon plasma phase" (PRACE, Partnership for Advanced Computing in Europe)
  PI: Prof. Chris Allton (Swansea University)
  Position: Collaborator
  Granting period: 01/11/2011 - 31/10/2012
- Title: Extreme QCD: Towards Quantitative Understanding of the QCD Phase Diagram (STFC DiRAC, Distributed Research utilising Advanced Computing)
  PI: Prof. Chris Allton (Swansea University)
  Position: Collaborator
  Granting period: 01/12/2012 - 31/11/2015

- Title: "Pushing the Strong Interaction past its Breaking Point Phase II: Towards Quantitative Understanding of the Quark-Gluon Plasma." (PRACE, Partnership for Advanced Computing in Europe)
  PI: Prof. Chris Allton (Swansea University)
  Position: Collaborator
  Granting period: 01/11/2012 - 31/10/2013

- Title: "The spectrum of supersymmetric Yang-Mills theory" (NIC, The John von Neumann Institute for Computing)
  PI: Prof. Gernot Muenster
  Position: Collaborator
  Granting period: 01/11/2013 - 31/10/2015

- Title: "The conformal window and technicolour theories with adjoint fermions" (NIC, The John von Neumann Institute for Computing)
  PI: Dr. Georg Bergner
  Position: Collaborator
  Granting period: 01/05/2014 - 30/04/2016

Research Interests (Keywords):
(Monte Carlo) numerical calculations, gauge field theory, lattice field theory, finite temperature, critical phenomena, temperature dependence, string tension, electric conductivity, confinement, deconfinement, quantum electrodynamics, string model, quark gluon plasma, supersymmetry, technicolor

Main research activities:

- non-Abelian gauge theories at non-zero temperature with and without dynamical fermions
- deconfinement transition in gauge theories
- non-zero density
- QED in 2+1 dimensions
- properties of confining strings; k-strings
- monopoles and gluons in percolation theory
- width of resonances in Lattice QCD
- stochastic quantization at finite chemical potential
- properties of Quark Gluon Plasma
- supersymmetric Yang-Mills theory on the lattice
- technicolor

Scientific production summary:
50 publications, 16 articles in peer-reviewed journals and 34 conference contributions, with more than 330 citations (SPIRES) and Hirsch number 10

Peer review:
Referee for the following journal: Physical Review D

Collaborators:

1. Prof. Alessandro Papa (University of Calabria, Italy) - February 2001 (The method of analytical continuation in SU(2); effective models to describe the high temperature phase of $SU(N)$ gauge theory; planar QED: compact versus non-compact formulation; QED3 in an external magnetic field)

2. Prof. Simon Hands (Swansea University, UK) - February 2005 (The 3d SU(2) gauge-adjoint Higgs model at non-zero temperature and density; 4d SU(2) gauge theory at high density and low temperature)

3. Prof. Ferdinando Gliozzi (University of Torino, Italy) - December 2005 (The quantum fluctuations of k-strings: the simple case of 3d Z_4 gauge theory model; the quantum fluctuations of fundamental string in percolation model; the broadening of the confining flux tube; monopoles and gluons in percolation theory)

4. Prof. Michael Peardon (Trinity College Dublin, Ireland) - October 2008 (Mass and width of resonances in Lattice QCD)

5. Prof. Paolo Cea and Dott. Leonardo Cosmai (Universita' di Bari, Italia) - October 2009 (QED3 in an external magnetic field)

6. Prof. Gert Aarts (Swansea University, UK) - October 2010 (Stochastic quantization and sign problem)

7. Prof. Jon-Ivar Skullerud (NUIM, Maynooth, Ireland) September 2011 (4d SU(2) gauge theory at high density and low temperature, properties of the Quark Gluon Plasma)

8. Prof. Chris Allton (Swansea University, UK) - October 2011 (Study of the Quark Gluon Plasma: hydrodynamic and spectral information contained in correlation functions)

9. Prof. Gernot Muenster (Muenster University, Germany) and Istvan Montvay (Desy, Germany) - June 2013 (Supersymmetric Yang-Mills theory and technicolor)

Attendance to Conferences:

1. "Quark Gluon Plasma and Heavy ion Collisions: Past, Present, Future",
   Frascati, Roma (Italy), 14-18/January/2002.

2. "SMFT 2002, XI workshop on Statistical Mechanics and non perturbative Field Theory",
   Bari (Italy), 26-28/September/2002.

3. "Cortona 2003", Informal Meeting of the Italian Theoretical Physics,
   Cortona, Arezzo (Italy), 28-31/May/2003.

4. "Cortona 2004", Informal Meeting of the Italian Theoretical Physics,
   Cortona, Arezzo (Italy), 26-29/May/2004.

5. "Lattice 2004, The XXII International Symposium on Lattice Field Theory",
   Fermi National Accelerator Laboratory, Batavia, Illinois (USA), 21-26/June/2004.

6. "SMFT 2004, XII workshop on Statistical Mechanics and non perturbative Field Theory",
   Bari (Italy), 29/September - 1/October/2004.

7. "Lattice 2005, The XXIII International Symposium on Lattice Field Theory",
   Trinity College, Dublin (Ireland), 25-30/July/2005.

8. "Lattice 2006: The XXIV International Symposium on Lattice Field Theory", Tucson, Arizona (USA), 23-28/July/2006.

9. "SMFT 2006, XIII workshop on Statistical Mechanics and non perturbative Field Theory", Bari (Italy), 20-22/September/2006.

10. "Cortona 2007", Informal Meeting of the Italian Theoretical Physics, Cortona, Arezzo (Italy), 28/May - 1/June/2007.

11. "Lattice 2007: The XXV International Symposium on Lattice Field Theory", Regensburg (Germany), 30/July - 4/August/2007.

12. "Sestri Levante 2008", Informal Meeting of the Italian Theoretical Physics, Sestri Levante, Genova (Italy), 4-6/June/2008.

13. "Lattice 2008: The XXVI International Symposium on Lattice Field Theory", Williamsburg, Virginia (USA), 14-19/July/2008.

14. "Hadron 2009: XIII International Conference on Hadron Spectroscopy", Tallahassee, Florida (USA), 29/November - 4/December/2009.

15. "Annual Theory Meeting 2009 Durham University", Durham (UK) 17-19/December/2009.

16. "Lattice 2010: The XXVIII International Symposium on Lattice Field Theory", Villasimius, Sardinia (Italy), 14-19/June/2010.

17. "Extreme QCD 2010 (Workshop on QCD under extreme conditions)", Bad Honnef (Germany), 21-23/June/2010.

18. "Annual Theory Meeting 2010 Durham University", Durham (UK) 16-18/December/2010.

19. "Lattice 2011: The XXIX International Symposium on Lattice Field Theory", Squaw Valley, California (USA), 11-16/July/2011.

20. "SMFT 2011, XV workshop on Statistical Mechanics and non perturbative Field Theory", Bari (Italy), 21-23/September/2011.

21. "STRONGnet 2011 Progress Workshop," ECT*, Trento (Italy), 3-7/October/2011.

22. "Annual Theory Meeting 2011, Durham University", Durham (UK), 15-17/December/2011.

23. "HoloGrav: 2012", Swansea (UK), 16-20/April/2012.

24. "Strong and Electroweak Matter 2012", Swansea (UK), 10-13/July/2012.

25. "New Frontiers in Lattice Gauge Theory" (GGI workshop), Firenze (Italy), 27-31/August/2012.

26. "International Workshop on the Sign Problem in QCD and Beyond: SIGN2012", Regensburg (Germany), 19-22/September/2012.

27. "Workshop on QCD in strong magnetic fields",
ECT*, Trento (Italy) 12-16/November/2012.

28. "Annual Theory Meeting 2012, Durham University",
Durham (UK), 17-19/December/2012.

29. "Lattice 2013: The XXXI International Symposium on Lattice Field Theory",
Mainz (Germany), 29/July - 3/August/2013.

30. "Extreme QCD 2013 (Workshop on QCD under extreme conditions)",
Bern (Switzerland),5-7/August/2013.

31. "International Workshop on the Sign Problem in QCD and Beyond: SIGN2014",
Darmstadt (Germany), 18-21/February/2014.

32. "Lattice 2014: The XXXII International Symposium on Lattice Field Theory",
New York, NY, Columbia University (USA) 23-28/June/2014.

33. "Critical Point and Onset of Deconfinement (CPOD 2014)",
Bielefeld University (Germany), 17-21/11/2014.

34. "Bound states in QCD and beyond",
St. Goar (Germany), 24-27/03/2015

35. "Lattice 2015: The XXXIII International Symposium on Lattice Field Theory",
Kobe (Japan), 14-18/07/2015

36. "European Physical Society Conference on High Energy Physics (EPS-HEP)",
Vienna (Austria), 22-29/07/2015

Attendance to "Schools of Physics":

1. "XII National Seminar of Theoretical Physics : Supersymmetry and Matrix Model",
Parma (Italy), 1-12/September/2003.

2. "XVI National Seminar of Nuclear and Subnuclear Physics",
Otranto, Bari (Italy), 19-25/September/2003.

3. "Quark Gluon Plasma and Heavy ion Collisions: Past, Present, Future",
Torino (Italy), 1-5/December/2003.

4. "Quark Gluon Plasma and Heavy ion Collisions: Past, Present, Future",
Torino (Italy), 11-17/May/2005.

Attendance to "Schools of Informatics":

1. "C++ Introduction",
CINECA, Bologna (Italy), 10-14/November/2003.

2. " Scientific calculus by Fortran 90",
CILEA, Milano (Italy), 24-26/February/2004.

3. "Techniques and tools for scientific programming in Linux/Unix environment",
CINECA, Bologna (Italy), 9-10/November/2006.

4. "Introduction to Parallel Programming",
TCHPC (Trinity Centre for High Performance Computing), Dublin (Ireland), 24-27/May/2010.

5. "Advanced school on parallel computing",
   CINECA, Bologna (Italy), 11-15/February/2013.

Talks and Seminars:

1. "SU(2) gauge theory , in 3+1 dimensions, at finite temperature and non-zero density with imaginary chemical potential",
   Cortona, Arezzo (Italy), May 2003.

2. "Real and imaginary chemical potential in SU(2) QCD",
   Torino (Italy), December 2003.

3. "QED_3 on a space-time lattice: compact versus non-compact formulation",
   Bari (Italy), October 2004.

4. "A comparison between compact and non-compact formulation of the three dimensional lattice QED",
   Swansea (UK), 3/June/2005.

5. "Gauge theories on the lattice at finite temperature and density",
   Cosenza (Italy), 20/September/2005.

6. "k-string fluctuations: a study in the 3d Z_4 gauge theory",
   Cosenza (Italy), 16/October/2006.

7. "The central charge in the k-strings",
   Cortona, Arezzo (Italy), 30/May/2007.

8. "The Conformal anomaly of k-strings",
   Regensburg (Germany), 2/August/2007.

9. "Percolation as a Gauge Theory: beyond the free string approximation",
   Sestri Levante, Genova, 6/June/2008.

10. "Confining string beyond the free approximation: the case of random percolation",
    Williamsburg, Virginia (USA), 18/July/2008.

11. "Percolation as a gauge theory: introduction and last results ",
    Dublin (Ireland), 21/October/2008.

12. "The resonance width determination from lattice field theory simulations",
    Cosenza, 3/February/2010.

13. "Hadronic decay width from finite-volume energy spectrum in lattice QCD",
    Tallahassee, Florida (USA), 1/December/2009.

14. "Hadronic decay width from finite-volume energy spectrum in lattice QCD",
    Torino, 11/December/2009.

15. "Extracting the width of a resonance from lattice field theory simulations",
    Frankfurt (Germany), 11/February/2010.

16. "Extracting resonance parameters from lattice data",
    Villasimius, Sardinia (Italy), 15/June/2010.

17. "Extracting resonance parameters from lattice data",
    Swansea (UK), 10/November/2010.

18. "Quark number susceptibility at finite density and low temperature",
Squaw Valley, California (USA), 15/July/2011.

19. "Lattice Planar QED in external magnetic field",
Bari (Italy), 21-23/September/2011.

20. "Lattice Planar QED in external magnetic field as nonperturbative approach to the Quantum Hall Effect in Graphene. ",
Cosenza (Italy), 21/December/2011.

21. "Chiral Symmetry Breaking of Planar QED in external magnetic field and its application to Quantum Hall Effect in Graphene",
Plymouth (UK), 25/April/2012.

22. "Extracting resonance parameters from lattice data",
Liverpool (UK), 9/May/2012.

23. "Chiral Symmetry Breaking of Planar QED in external magnetic field and its application to Quantum Hall Effect in Graphene",
ECT*, Trento (Italy), 12/November/2012.

24. "The phase diagram of dense 2-color matter",
Muenster University (Germany), 22/April/2013.

25. "Localised distributions in complex Langevin dynamics",
Mainz (Germany), 31/July/2013.

26. "Complex Langevin dynamics: localised distributions",
Muenster University (Germany), 18/November/2013.

27. "Last results of N=1 supersymmetric Yang-Mills theory with some topological insights",
New York (USA), 27/June/2014.

28. "N=1 supersymmetric Yang-Mills theory on the Lattice",
Cosenza (Italy), 18/July/2014.

29. "N=1 SUSY Yang-Mills theory on the lattice",
Muenster University (Germany), 3/November/2014.

30. "Supermultiplets of the N=1 supersymmetric Yang-Mills theory in the continuum limit",
Kobe (Japan), 18/07/2015.

31. "The low-lying spectrum of N=1 supersymmetric Yang-Mills theory",
Vienna (Austria), 25/07/2015

Speaker in Conference Poster Sessions:

1. "Finite temperature 2-color QCD for real and imaginary chemical potential", poster at the "International Symposium on Lattice Field Theory (LATTICE 2004)", Fermilab, Batavia, 21-26/June/2004.

2. "QED_3 on a space-time lattice: a comparison between compact and non-compact formulation", poster at the "International Symposium on Lattice Field Theory (LATTICE 2005)", Trinity College, Dublin, 25-30/July/2005.

3. "Quantum fluctuations of k-strings: A Case study", poster at the "International Symposium on Lattice Field Theory (LATTICE 2006)", Tucson, Arizona (USA), 23-28/July/2006.

4. "Can we study Quark Matter in the Quenched Approximation?", poster at the "International Symposium on Lattice Field Theory (LATTICE 2007)", Regensburg, Germany, 30/July - 4/August/2007.
5. "Lattice Planar QED in external magnetic field", poster at the "International Symposium on Lattice Field Theory (LATTICE 2011)", Squaw Valley, California (USA), 11-16/July/2011.
6. "New insights into dense two-color matter", poster at the "Strong and Electroweak Matter 2012", Swansea, UK, 10-13/July/2012.
7. "Electric charge susceptibility in 2+1 flavour QCD on an anisotropic lattice", poster at "International Symposium on Lattice Field Theory (LATTICE 2013)", Mainz (Germany), 29/July - 3/August/2013.
8. "Thermodynamics of dense 2-color matter", poster at "Extreme QCD 2013", Bern (Switzerland), 5-7/August/2013.
9. "Complex Langevin dynamics: the role of localised distributions", poster at "SIGN2014", Darmstadt (Germany), 18-21/February/2014.
10. "Low lying spectrum of SU(2) with adjoint Nf=2 fermions", poster at "Bound states in QCD and beyond", St. Goar (Germany), 24-27/03/2015

Computer skills

Operative systems:
Unix, Linux, Windows

Languages:
Fortran, C/C++, Shell Script, LaTex

Techniques and tools:
debugging, code optimization, computer cluster administration, basic knowledge of CHROMA package

HPC:

- experience of simulations on cluster of PCs
- Bluegene/P [PYXIS (Swansea University, UK), JUGENE (Forschungszentrum Juelich, Germany)]
- Bluegene/Q [DIRAC (University of Edinburg, UK), FERMI (CINECA, Italy)]