

Curriculum Vitae (ai fini della pubblicazione)

Cesare Bini

Roma 23/08/2019

1 Education

- 1983: Diploma di Maturit  Scientifica - Liceo Scientifico "Leonardo da Vinci" (Jesi) - votazione 60/60.
- 1988: Laurea in Fisica Universit  La Sapienza di Roma - votazione 110/110 e lode.
- 1992: Dottorato di Ricerca in Fisica (V ciclo) - Universit  La Sapienza di Roma.

2 Appointments

- 1993-1994: Borsa di Studio post-doc INFN.
- 1994-2004: Ricercatore universitario presso la Facolt  di Scienze Matematiche Fisiche e Naturali dell'Universit  La Sapienza di Roma.
- Since 2005: Professore Associato presso la Facolt  di Scienze Matematiche Fisiche e Naturali dell'Universit  La Sapienza di Roma.
- 2014: Conseguimento dell'Abilitazione Scientifica Nazionale come Professore Ordinario per il settore concorsuale 02/A1 Fisica Sperimentale delle Interazioni Fondamentali.

3 Teaching experiences

3.1 Courses

In the first years of my activity as researcher, I have done exercises for the following courses:

- Fisica Generale I, II for the degrees in Chemistry and Industrial Chemistry
- Esperimentazione Fisica I, II for the degree in Physics
- Istituzioni di Fisica Nucleare e Subnucleare for the degree in Physics

As professor I have been in charge for the following courses

- 1999-2000 e 2005-2006: Fisica Generale I for the degree in Chemistry
- 2000-2002: Esperimentazione Fisica II for the degree in Physics
- 2002-2007: Laboratorio di Strumentazione e Misura for the degree in Physics
- 2007-2014: Laboratorio di Meccanica for the degree in Physics
- 2013-2018: Fisica Sperimentale delle Particelle Elementari (later called Experimental Elementary Particle Physics) for the Master degree in Physics
- 2014-2018: Meccanica for the degree in Physics
- Starting from 2019: Elettromagnetismo for the degree in Physics

In 2011 and 2013 I have done lectures of "Lezioni di Metodologia Sperimentale" for excellent students for the degree in Medicina of Sapienza:

<http://www.roma1.infn.it/people/bini/LezioniMedicina.pdf>.

In 2016 I have done lectures of "La fisica dei rivelatori di particelle a gas" for excellent students for the degree in Fisica of Sapienza:

3.2 Supervisor of Diploma, Master and PhD theses

I have been supervisor of the following theses

1. Tesi di laurea quadriennale (Master theses):

- A.Galli "L'esperimento KLOE per la ricerca della violazione di CP: prove e messa a punto del calorimetro elettromagnetico", 1996
- P.Silano "Studio del decadimento $\phi \rightarrow \pi^+\pi^-\pi^0$ nell'esperimento KLOE", 2000
- D.Leone "Studio del decadimento $\phi \rightarrow \eta\pi^0\gamma$ nell'esperimento KLOE", 2001
- S.Ventura "Studio del decadimento $\phi \rightarrow f_0(980)\gamma \rightarrow \pi^+\pi^-\gamma$ nell'esperimento KLOE", 2003
- F.Crucianelli "Studio del decadimento $K_S \rightarrow \pi^+\pi^-e^+e^-$ con il rivelatore KLOE a DAΦNE", 2007

2. Dissertazioni di laurea triennale (Bachelor theses):

- V.Consorti "Studio della produzione di mesoni scalari nei decadimenti della ϕ con l'esperimento KLOE", 2006
- V.Santini "Calibrazione delle camere di precisione per muoni nell'esperimento ATLAS", 2006
- G.Carta "Lo spettrometro a muoni del rivelatore ATLAS ad LHC", 2007
- F.R.Borgna "Tecniche di rivelazione di neutroni basate su scintillatori", 2007
- I.Mattei "Risultati recenti sul fattore di forma elettromagnetico del protone", 2009
- R.Garra "Misura dell'anomalia del momento magnetico del muone: rassegna storica e prospettive", 2009
- E.Della Ratta Rinaldi "Inferenza statistica nei casi di basso conteggio", 2010
- J.Iacovacci "Camere per muoni dell'esperimento ATLAS", 2010
- G.D'Imperio "Ricerca del momento di dipolo elettrico di muoni e nuclei di deuterio in anelli di accumulazione", 2010
- M.Cesarini "Stato delle ricerche dei pentaquark", 2014
- V.D'Amico "Il calorimetro elettromagnetico dell'esperimento KLOE", 2014
- G.Sebastiani "Le camere Micromegas per l'upgrade di ATLAS", 2014
- F.M.DeLuca "Analisi di piccoli segnali in presenza di fondo", 2014
- S.Gargiulo "L'osservazione del bosone di Higgs a LHC", 2014
- A.Biondi "La ricerca delle conversioni di muoni in elettroni con l'esperimento mu2e", 2016
- S.Proietti "I rivelatori di particelle a gas", 2016
- G.Salvi "L'esperimento g-2 al Fermilab", 2016
- L.Saccoccio "Esperimenti per le oscillazioni dei neutrini", 2017
- A.Triacca "I rivelatori Micromegas", 2017
- C.Sansone "Metodo della massima verosimiglianza applicato a fit di distribuzioni sperimentali", 2018
- D.Tozzi "I rivelatori MicroMegas", 2018

3. Tesi laurea specialistica o Magistrale (Master theses):

- S.Borroni "Studio delle prestazioni delle camere MDT dell'esperimento ATLAS", 2007

- V.Consorti "Analisi della qualità dei dati dell'esperimento ATLAS al centro di calibrazione di Roma", 2009
- F.Scutti "Studio della produzione di muoni singoli, con i primi dati dell'esperimento ATLAS ad LHC.", 2011
- A.Calandri "Ricerca del Bosone di Higgs del Modello Standard nel canale $H \rightarrow ZZ \rightarrow 4$ leptoni con tecniche di analisi multivariata nell'esperimento ATLAS ad LHC", 2012
- S.Biondi "Studio delle prestazioni delle camere Micromegas per l'upgrade dello spettrometro a muoni dell'esperimento ATLAS", 2013
- V.Santini "Preparazione di una stazione per raggi cosmici per il test delle camere Micromegas per l'upgrade del rivelatore dell'esperimento ATLAS" (con C.Gatti), 2013
- S.R.Soleti "Study of requirements and alternatives of the electromagnetic calorimeter for the Mu2e experiment at Fermilab" (con S.Miscetti), 2015
- P.Tornambé "Ricostruzione di muoni nelle camere Micromegas per il rivelatore dell'esperimento ATLAS", 2015
- A.Betti "Studio delle prestazioni di camere Micromegas per l'upgrade dello spettrometro a muoni di ATLAS", (con F.Lacava) 2016
- D.Vannicola "Misura dei rate nelle Resistive Plate Chambers per l'upgrade del trigger di primo livello di muoni dell'esperimento ATLAS", (con S.Rosati e M.Corradi) 2016
- S.Gargiulo "Higgs boson coupling characterization in the 4-lepton channel with the ATLAS experiment", (con S.Rosati) 2016
- M.Cesarini "Studio delle prestazioni del modulo0 delle camere MicroMegas per l'upgrade dell'esperimento ATLAS", 2016
- S.Curcio "Studio delle prestazioni delle camere MicroMegas per l'upgrade dell'esperimento ATLAS", 2016
- D.Vannicola "Misura dei rate nelle Resistive Plate Chambers per l'upgrade del trigger di primo livello di muoni dell'esperimento ATLAS", 2016
- V.D'Amico "Studio delle prestazioni del trigger per muoni nella zona centrale del rivelatore ATLAS per la fase ad alta luminosità di LHC" (con M.Corradi), 2017
- L.Martinelli "Analysis of the MicroMegas chambers performances for the upgrade of the ATLAS experiment at LHC", 2017
- E.Arena "Misura delle sezioni d'urto differenziali nel canale $H \rightarrow ZZ^* \rightarrow 4l$ con il rivelatore ATLAS" (con S.Rosati), 2018
- A.Biondini "Misura dell'efficienza di trigger per muoni di basso impulso per la misura della produzione Drell-Yan" (con M.Corradi), 2018
- L.Vannoli "Validazione con raggi cosmici di camere Micromegas", 2019
- M.Carnesale "Study of track reconstruction with the New Small Wheel for the ATLAS experiment", in progress, 2019

4. Tesi di Dottorato di Ricerca in Fisica (PhD theses):

- S.Fiore: "Search for the decay $\phi \rightarrow K_0 \overline{K_0} \gamma$ with the KLOE detector" - 2008
- S.Borroni: "Study of the $pp \rightarrow Z \rightarrow \mu^+ \mu^-$ process at ATLAS: detector performance and first cross-section measurement at 7 TeV" - 2010
- A.Gabrielli: "Study of the Higgs boson physics properties with the ATLAS detector at the Large Hadron Collider" - 2014
- D.Vannicola: "Search for dimuon resonances with the ATLAS experiment at LHC" (title to be defined) - 2017

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3.3 Text-books

- "Lezioni di Statistica per la Fisica Sperimentale" Edizioni Nuova Cultura Roma ISBN 886134295-7 text-book of laboratory class for the first year of the degree in Physics.
- "Complementi di Meccanica per Laboratorio" for students of Laboratorio di Meccanica http://www.roma1.infn.it/people/bini/complementi_meccanica.pdf
- "Data analysis for Elementary Particle Physics" for students of Experimental Elementary Particle Physics for the Master degree in Physics: <http://www.roma1.infn.it/people/bini/StatEPP.pdf>
- "Experimental Elementary Particle Physics: problems with solutions" for students of Experimental Elementary Particle Physics for the Master degree in Physics: <http://www.roma1.infn.it/people/bini/ProblemsSolutions>

3.4 Outreach seminars

- "L'Universo secondo la Fisica Moderna" Seminario divulgativo al Liceo Classico di Jesi April 15 2005;
- "La Fisica delle Particelle Elementari" Seminario divulgativo, Liceo Scientifico di Jesi May 10 2008;
- "Il mestiere dello scienziato" Seminario divulgativo, Scuola Media Borsi, Roma May 12 2012;
- "Da Rutherford a Higgs, 100 anni di fisica fondamentale" Seminario divulgativo, Liceo Scientifico Jesi, April 11 2015;
- "Scoperta bosone di Higgs; come funziona un rivelatore di particelle" Seminario divulgativo, Stage estivi Laboratorio Nazionale di Frascati, June 12 2015;
- "Open problems in fundamental physics" Seminario divulgativo, Pontificia Università Lateranense, Roma November 24 2016;
- "L'immagine dell'Universo nell'infinitamente piccolo" Seminario divulgativo, Biblioteca Pianettiana Jesi, January 13 2017;

3.5 Tasks related to department and faculty activities

- 2002-2005: Member of: Giunta di Dipartimento di Fisica, Sapienza Università di Roma.
- 2003-2009: Coordinator of the high energy physics seminars, Dipartimento di Fisica.
- 2003-2010: Chairman of: Commissione per la Qualificazione e Incentivazione del personale del Dipartimento di Fisica, Sapienza Università di Roma.
- 2007: Member of: Commissione per l'ammissione al XXIII Ciclo del Dottorato di Ricerca in Fisica, Sapienza Università di Roma
- 2009-2017: Member of: Giunta del Consiglio di Area Didattica in Fisica, Sapienza Università di Roma.
- Since 2010: Member of: Commissione per le ammissioni alle lauree Magistrali in Fisica, Sapienza Università di Roma
- Since 2012: Member of: Collegio Docenti del Dottorato di Ricerca in Fisica, Sapienza Università di Roma.
- 2013: Chairman of: Commissione per l'ammissione al Dottorato di Ricerca in Fisica degli Acceleratori, Sapienza Università di Roma
- Since 2014: Delegate of the Faculty Dean for: gestione aule della Facoltà di Scienze Matematiche Fisiche e Naturali, Sapienza Università di Roma.
- Since 2017: Responsible for the admission of foreigner students at the Master degree in Particle and Astroparticle Physics, Sapienza
- 2018: Chairman of: commissione per l'esame finale del Dottorato di Ricerca in Fisica degli Acceleratori, Sapienza Università di Roma

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- Since 2018: Member of: Giunta del Collegio dei Docenti del Dottorato di Ricerca in Fisica, representing the area of experimental particle physics, Sapienza Università di Roma
- 2019: Chairman of: Commissione per l'ammissione al XXXV Ciclo del Dottorato di Ricerca in Fisica, Sapienza Università di Roma

3.6 Institutional tasks in other universities

- 2000: Member of: Commissione per un posto di ricercatore universitario B01A - Fisica Generale, Università degli studi Federico II di Napoli.
- 2002: Member of: Commissione per un posto di ricercatore universitario FIS/01 - Fisica Sperimentale, Università degli studi della Calabria, Cosenza.
- 2003: Member of: Commissione per un posto di ricercatore universitario FIS/01 - Fisica Sperimentale, Università Federico II di Napoli .
- 2009: Member of: Commissione per l'esame finale del Dottorato di Ricerca in Fisica, Università Federico II di Napoli
- 2014: Member of: Commissione per l'esame finale del Dottorato di Ricerca in Fisica, Università del Salento, Lecce
- 2018: Member of: Commissione per l'esame finale del Dottorato di Ricerca in Fisica, Università della Calabria, Cosenza
- 2018-2019: Referee of PhD theses at University of Pavia and University of Rome3.

4 Awards

For two consecutive years I have been awarded for the quality of my teaching, by a special prize recently introduced in our Faculty.

- 2016-2017: Riconoscimento di eccellente insegnamento universitario della Facoltà di Scienze Matematiche Fisiche e Naturali.
- 2017-2018: Riconoscimento di eccellente insegnamento universitario della Facoltà di Scienze Matematiche Fisiche e Naturali.

5 Funding informations

All my scientific research activities have been carried out within projects financed by National Institute for Nuclear Physics (INFN) and, to a minor extent, by Sapienza University. The list below shows the cases where I have been the responsible of funding. The last case given below corresponds to a national coordination activity that requires a financial management too.

- 2007-2012: Coordinatore di gruppo1 - INFN Sezione di Roma - yearly budget about 100 keuro
- 2012-2014: ATLAS-Roma1 group leader - yearly budget about 300 keuro
- 2015-2018: PI of Sapienza funded project: "Studio del bosone di Higgs prodotto in associazione con il quark top in collisioni protone-protone ad energie del centro di massa di 13 TeV " - total budget 13 keuro.
- Since 2016: National coordinator of the project ATLAS-NSW for INFN, The total budget for the INFN is about 1 Meuro

6 Research activities

All my scientific research activities are in the field of the experimental elementary particle physics, within, as mentioned above, projects financed by INFN.

The main fields of interest have been and are.

- The physics of e^+e^- collisions in the region between 1 and 3 GeV center of mass energy, through a significant participation to the experiments FENICE and KLOE at the Frascati National Laboratories of INFN;
- The physics of proton-proton collisions at the high-energy frontier through the participation at the ATLAS experiment at LHC at CERN.
- Strictly connected to these experimental programs, I have also carried out several research and development studies on particle detectors together with construction and calibration activities, in particular on scintillating fibers calorimeters, and high precision gas detectors.

6.1 List of activities

- **NADIR** 1987-1989: Search for neutron-antineutron oscillations and measurement of the anisotropy of cosmic rays at ground level (Master thesis).
- **LEP-5** 1989-1993: Fast measurement of the LEP luminosity using the single bremsstrahlung and first observation of the phenomenon of back-scattering of thermal photons on the LEP electron beam.
- **FENICE**. 1990-1996: First measurement of the neutron form factor in the time-like region; New measurement of the proton form factor in the time-like region; Study of multi-hadronic production in e^+e^- collisions between 2 and 3 GeV; Measurements of the branching fractions of the J/ψ decaying to nucleon-antinucleon pairs. (PhD thesis)
- **KLOE**. 1992-2010: First observation of the quantum interference of the neutral kaons in phi decays; Measurement of the CKM matrix element V_{us} and other kaon physics; Study of radiative decays of the phi resonance in scalar and pseudo-scalar mesons; Measurement of the hadrons contribution to the muon g-2 anomaly through $\pi^+\pi^-$ cross-section using the radiative return method.
- **ATLAS**. Since 1997: Physics of hadron collisions at the high energy frontier; Discovery of the Higgs boson and measurement of its main properties; Precision measurements of Standard Model quantities; Search for physics beyond the Standard Model; Study of the properties of quark-gluon plasma in heavy-ion collisions
- **Detectors**. Lead - scintillating fibers electromagnetic calorimeters, in particular the KLOE calorimeter; Monitored Drift Tubes chambers (MDT) for ATLAS at LHC; Micromegas chambers for the upgrade of the ATLAS Muon Spectrometer .

6.2 Responsibilities within the experiments

- FENICE 1997-1998: Editor of the two final papers of the FENICE experiment
- KLOE 1994-1997: Convener of the Working Group "Calorimeter cosmic-ray test stand"
- KLOE 2000-2003: Convener of the Working Group "Detector Calibration"
- KLOE 2001-2004: Convener of the Working Group "Physics of Phi-Decays"
- KLOE 2002-2008: Member of the Executive Board
- ATLAS 2002-2004: Convener of the Working Group "Studio delle proprietà di deriva dei tubi MDT", within ATLAS-Italy
- ATLAS 2008-2010 -: Convener of Montecarlo validation for HSG2 (Higgs to Four Leptons WG)

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- ATLAS Since 2009-: Responsible of the MDT calibration activity within ATLAS-Roma
- ATLAS Since 2010: Member of the Analysis Team of the following papers:
 - "Measurement of the inclusive W^{+-} and Z/γ cross sections in the electron and muon decay channels in pp collisions at $\sqrt{s}=7$ TeV with the ATLAS detector" - Phys.Rev. D85 (2012) 072004.
 - "Search for the Standard Model Higgs boson in the decay channel $H\rightarrow ZZ(*)\rightarrow 4l$ with 4.8 fb^{-1} of pp collisions at $\sqrt{s}=7$ TeV with ATLAS" - Phys.Lett.B710 (2012) 383
- ATLAS Since 2010: Member of the Editorial Boards of the following papers:
 - "Measurement of the Upsilon(1S) Production Cross-Section in pp Collisions at $\sqrt{s} = 7$ TeV in ATLAS" - Phys.Lett. B705 (2011) 9-27;
 - "Measurement of Z boson production in Pb+Pb collisions at $\sqrt{s_{NN}}=2.76$ TeV with the ATLAS detector" - Phys. Rev. Lett 110, 022301 (2013);
 - "Measurement of the production cross-section of prompt J/ψ mesons in association with a W boson in pp collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector" -JHEP04(2014)172;
 - "Measurement of the production and lepton charge asymmetry of W bosons in PbPb collisions at $\sqrt{s_{NN}}=2.76$ TeV with the ATLAS detector" - Eur. Phys. J. C75 (2015) 23;
 - "Measurement of the azimuthal anisotropy of charged particles in $\sqrt{s_{NN}}=5.02$ TeV PbPb collisions with the ATLAS experiment" - Eur. Phys. J. C78 (2018) 997;
 - " R_{AA} and V_2 of muons from heavy-quark decay in lead-lead collisions at $\sqrt{s} = 2.76$ TeV within the ATLAS detector" - under publication;
 - "Measurement of azimuthal anisotropy of muons from charm and bottom hadrons in pp collisions at $\sqrt{s} = 13$ TeV" - under publication.
- ATLAS 2011-2014: ATLAS-Roma Team Leader, Member of the ATLAS Collaboration Board
- ATLAS 2013-2014: Chairman of the Organizing Committee of the following ATLAS workshops:
 - "Higgs \rightarrow ZZ HSG2" Workshop, Roma 22-26 april 2013
 - "Micromegas Mechanics" Workshop, Roma 15-16 july 2013
 - "Higgs" Workshop, Roma 14-18 april 2014
- ATLAS Since 2014: Chairman of the Working Group "MicroMegas Test beam analysis".
- ATLAS Since 2014: Member of the Muon Speaker Committee.
- ATLAS 2015-2017: Chairman of the Muon Speaker Committee.
- ATLAS Since 2016: Member of the MicroMegas coordination group.
- ATLAS Since 2016: National representative of the ATLAS-NSW activity
- ATLAS Since 2017: Co-coordinator of the ATLAS-MicroMegas Project
- ATLAS Since 2019: Co-production manager of the ATLAS-MicroMegas Project

6.3 Partecipazione to committees and peer reviews

- Since 2004: Referee for Phys.Lett. B
- Since 2004: Referee for Journal of High Energy Physics (JHEP)
- 2005-2006: Convener of the Working Group "Fisica e^+e^- a LNF" of the INFN RoadMap.
- 2006-2012: Member of INFN-CSN1 (Commissione Scientifica Nazionale I) representing Sezione di Roma.
- 2006-2015: Referee INFN of the TOTEM experiment.

- Since 2012: Referee ANVUR.
- 2015-2017: Member of the International Committee for the TDR of the Fermilab Mu2e experiment calorimeter, USA.
- Since 2015: Referee for IEEE Trans. on Nucl.Scie.
- Since 2015: Referee for Nuclear Instruments and Methods A
- 2016: Referee for Scientific Reports
- 2016: Referee for Journal of University of Science and Technology of China
- 2017: Peer Reviewer for Research Grant for Research Fellows of the Royal Society, UK
- 2018: Referee MIUR for PRIN 2017
- 2019: Member of the Review Committee for the BESIII White Paper, China

6.4 Talks, seminars and organization of conferences

I have given more than 30 talks at national and international conferences and 10 invited seminars. I participated to the organization of several conferences.

All talks given after 2002 are available at <http://www.roma1.infn.it/people/bini/talks.html>.

6.4.1 Talks at conferences

1. "Distribuzione in ascensione retta di sciami di muoni cosmici osservati al livello del mare nell'emisfero Nord" LXXV Congresso Nazionale S.I.F., Cagliari 1989;
2. "Misura veloce della luminosità a LEP con il metodo della singola bremsstrahlung" LXXVII Congresso Nazionale S.I.F., L'Aquila 1991;
3. "Nucleon Electromagnetic Form Factors in the time-like region: first results from the FENICE experiment" Scuola Invernale di Fisica Adronica, Folgaria 1992;
4. "First measurement of the neutron time-like form factors and other results from the FENICE experiment" Workshop on Diquarks II - Torino, Villa Gualino, 1992;
5. "Measurement of the neutron time-like Form Factors in the FENICE experiment" V Int. Symposium on Pion-Nucleon and the Structure of the Nucleon, Boulder (USA) 1993;
6. "Thermal neutron radiation damage on light yield and attenuation length of scintillating fibres" V Int. Congress of calorimetry in High Energy Physics, La Biodola Isola d'Elba 1993;
7. "Performance of a scintillating fibres semiprojective electromagnetic calorimeter" IV International Conference on Advanced Detectors and Particle Physics, Como, 1994;
8. "The Nucleon Electromagnetic Form Factors in the time-like region: new results from the Fenice experiment" Workshop on Diquarks III, Torino, 1996;
9. "A first proposal for a new measurement of the nucleon form factors at an asymmetric e^+e^- collider" First Ankara Workshop on Linac-Ring Colliders, Ankara (Turkey) 1997;
10. "The KLOE electromagnetic calorimeter" 7th Pisa Meeting on Advanced Detectors, La Biodola, Isola D'Elba, 1997;
11. "The FENICE results and a new proposal for the measurement of the nucleon time-like form-factors at an asymmetric e^+e^- collider" VII Int. Symposium on Meson-Nucleon and the structure of the Nucleon, Vancouver (Canada), 1997;
12. "A new measurement of the decay $J/\psi \rightarrow$ nucleon-antinucleon and an estimate of the phase difference between the electromagnetic and the strong amplitude" III Intern. Conference on charm and beauty hadrons, Genova, 1998;

13. "Status of the KLOE experiment" Workshop on e^+e^- annihilations from ϕ to J/ψ , Novosibirsk (Russia), 1999;
14. "Recent results from the KLOE experiment" Les Rencontres de Physique de la Vallée d'Aoste, sixteenth workshop on particle physics, La Thuile, 2002;
15. "The KLOE Calorimeter" Workshop on Advanced Electromagnetic Calorimetry and its Applications (FEMC03) Julich (Germany), 2003;
16. "Recent Results on Light Meson Physics" XXIII Physics in Collisions Conference, Zeuthen, (Germany), 2003;
17. "Status of a_0 and $f_0 \rightarrow \pi^+\pi^-$ at KLOE" Euridice Workshop - Barcelona (Spain), 2004;
18. "Recent results of the KLOE experiment", EtaMeson Network Workshop - Uppsala, (Sweden), 2004;
19. "Study of the radiative decays of the phi mesons to the scalar mesons f_0 and a_0 with the KLOE detector" Hadron2005, Rio de Janeiro (Brasil), 2005;
20. "Review of KLOE results on Hadron Physics" IVth International Conference on Quarks and Nuclear Physics, Madrid (Spain), 2006;
21. "Experimental Review on Light Meson Physics" VIIth International Conference on Quark Confinement and Hadron Structure, Ponta Delgada (Portugal), 2006;
22. "DAFNE2: prospettive di fisica e+e- a Frascati" Incontri di Fisica della Alte Energie 2007, Napoli, 2007;
23. "KLOE results on hadron physics" MENU2007, Julich (Germany), 2007;
24. "KLOE results on hadron physics" Hadron2007, Frascati, 2007;
25. "KLOE results on light meson properties" ICHEP2008, Philadelphia (USA), 2008;
26. "Searches for Higgs and physics beyond the Standard Model with ATLAS" ISMD2011, Hiroshima (Japan), 2011;
27. "Study of the performance of the ATLAS muon spectrometer" IEEE Nuclear Science Symposium and Medical Imaging Conference, Valencia (Spain), 2011;
28. "Study of the performance of the MicroMegas chambers for the ATLAS muon spectrometer upgrade" IPRD2013, Siena, 2013;
29. "Properties and spectroscopy of b-hadrons with the ATLAS detector" PASCOS 2013, Taipei (Taiwan) 2013;
30. "L'esperimento NADIR e gli RPC", Workshop in onore di Rinaldo Santonico, Roma Università di Tor Vergata, Roma, 2014;
31. "Higgs physics at LHC", LCF15, Trento, 2015;
32. "Production of exotic and conventional quarkonia and open beauty/open charm at ATLAS", Beauty 2017, Fairfax (USA), 2016;
33. "Status of the art of the new generation of MPGD detectors", Invited talk at the IWHSS17, Cortona, 2017
34. "ATLAS results on quarkonia and its associated production", ICHEP 2018, Seoul (South Korea), 2018

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6.4.2 Seminars

1. "The KLOE Experiment at Dafne" Seminario su invito al Laboratorio di Saclay (Francia), 1994;
2. "Risultati finali dell'esperimento Fenice e prospettive future" Seminario su invito all'Università di Torino, Torino, 1997;
3. "Misura della fase dell'ampiezza di decadimento forte della J/ψ " Seminario su invito ai Laboratori Nazionali di Frascati per il ciclo Incontri di Fenomenologia in area romana, Frascati, 1997;
4. "Risultati finali dell'esperimento Fenice e prospettive future" Seminario presso il Dipartimento di Fisica dell'Università "La Sapienza", Roma, 1998;
5. "Primi risultati dell'esperimento KLOE" Seminario presso il Dipartimento di Fisica dell'Università "La Sapienza", Roma, 2001;
6. "Scalar Meson Physics with the KLOE detector" Seminario all'Università di Roma Tre, Roma, 2005;
7. "Hadron Physics with KLOE and KLOE-2" Seminario alla Johannes Gutenberg Universitaet Mainz (Germany), 2009;
8. "Physics with muons at the Large Hadron Collider " Seminario a LIP, Laboratorio de Instrumentacao e Fisica Experimental de Particulas, Lisbona (Portugal), 2011;
9. "Osservazione di una risonanza di massa 126 GeV nella ricerca del bosone di Higgs con l'esperimento ATLAS ad LHC", Seminario presso il Dipartimento di Fisica dell'Università "La Sapienza", Roma, 2012;
10. "Il progetto New Small Wheel nel quadro dell'upgrade dello spettrometro a muoni dell'esperimento ATLAS", Seminario presso il Dipartimento di Fisica dell'Università di Napoli, Napoli, 2016;

6.4.3 Conference organization and convenerships

- Member of the Organizing Committee of the following conferences:
 - Nucleon 1999 Workshop on the structure of the Nucleon, Frascati, 7-9 June 1999
 - Lepton-Photon 2001 XX International Symposium on Lepton and Photon Interactions at High Energies, Rome, 23-38 July 2001
 - Workshop on the prospects of e^+e^- physics at LNF, Frascati, 19-20 January 2006
 - PhiPsi 2008 International Workshop on e^+e^- collisions from ϕ to ψ , Laboratori Nazionali di Frascati, 7-10 Aprile 2008
 - Discrete 2010 Symposium on Prospects in the Physics of Discrete Symmetries, Roma 6-10 Dicembre 2010
 - PhiPsi 2013 International Workshop on e^+e^- collisions from ϕ to ψ , Roma 9-12 settembre 2013
- Editor (in collaboration with G.Venanzoni) of the proceedings of the conference PhiPsi 2008 "International Workshop on e^+e^- collisions from ϕ to ψ " pubblicati da Nuclear Physics B (Proc. Suppl.) 181+182 (2008) September 2008
- Convener of the Light Quarks session at the conference QCHS 2010, Quark Confinement and Hadron Spectrum, Madrid, 30 agosto - 3 settembre 2010
- Convener of the Experiment session at the International Workshop ATHOS 2012, Camogli (Ge) 20-22 giugno 2012

7 Summary of scientific achievements

7.1 Publications

Bibliometric informations are given for the entire scientific career (1989-2019) and for the last 15 years (2005-2019). The data are taken from the Scopus DataBase. The data on Impact Factor before 1999 are not available, I assumed 0 IF for all the publications before 1999.

| | 1989 - 2019 | 2005 -2019 |
|---------------------------------------|-------------|------------|
| Number of papers | 964 | 894 |
| Total Impact Factor | 2781 | 2708 |
| Average Impact Factor per publication | 2.87 | 3.14 |
| Total citations | 45853 | 44515 |
| Average citation per publication | 47.6 | 49.7 |
| Hirsch (H) index | 94 | 93 |
| Normalized H-index | 3.13 | 6.20 |

7.2 Main scientific achievements.

Among the published results of my research activities I list below those that I consider more significant and where my contribution has been particularly relevant:

- First measurement of the neutron time-like form factor with the FENICE experiment. Close to the nucleon-antinucleon threshold, the form factor turns out to be unexpectedly high when compared to the one of the proton. This results have been recently confirmed by the BES experiment.
- Measurement of the branching ratios of the J/ψ going to neutron-antineutron and to proton-antiproton with the FENICE experiment. This was the subject of my PhD thesis. Through the comparison of these two BRs we have also put in evidence the existence of a sizeable relative phase between the electromagnetic and the strong amplitudes contributing to the decays. This item is also debated after results of new experiments, in particular the BESIII experiment now.
- Design and realization of the KLOE calorimeter. The KLOE calorimeter proved to be an optimal solution for the KLOE physics, reaching among the best performance in terms of energy resolution for a sampling calorimeter and an excellent time performance. I have been involved since the beginning in the design, construction and calibration of the KLOE calorimeter. I have done tests on prototypes, I coordinated the tests of the modules during the production and I have been responsible of the calorimeter calibration and operation during KLOE data taking.
- Measurement of the radiative decays of the ϕ meson in scalar mesons with the KLOE experiment. From the study of the dynamic of these decays we have obtained significant hints for a non-standard nature of the $f_0(980)$ and $a_0(980)$ mesons. I have coordinated the analyses of $f_0 \rightarrow \pi^+\pi^-$ and KK and of $a_0 \rightarrow \eta\pi^0$. This issue is still now under strong debate.
- Precision measurement of the hadronic cross-section for center of mass energies from the threshold to the ϕ resonance peak with the KLOE experiment, using the radiative return method. The method has been used for the first time at KLOE and it gave an important input for the calculation of the hadronic contributions to the g-2 of the muon. The discrepancy between the measured and the estimated value of such anomaly is still one of the few clear discrepancies between the Standard Model and the data. A new Fermilab experiment aiming to reduce the experimental accuracy is in progress now.
- Realization of the Monitorized Drift Tubes (MDT) for the ATLAS Muon Spectrometer. This detector turned out to be a very solid technique with good resolution and efficiency up to large rates and with a very stable operation. I participated to the construction of the chambers in Rome, to the tests of the prototypes at CERN and finally to the calibration of the MDT chambers during the ATLAS data taking.
- Discovery of the Higgs boson with the ATLAS experiment. Together with my Rome group I have actively participated to this search in the Higgs to four leptons final state, in particular the four muons in the final state. A big role in this discovery is given by the muon spectrometer performance and of the muon trigger efficiencies. After the discovery of the Higgs in 2012, we continued the effort in the area of the Higgs properties, to measure both spin and couplings.
- Study of muon production in heavy-ion collisions with the ATLAS experiment. I have been member and on some cases chairman of the Editorial boards of few papers related to the study of high-energy Pb-Pb collisions. The possibility to use muons as probes of physics at extreme energy densities revealed to be very fruitful and many properties of the heavy-ion phenomenology have been clarified.

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- Use of Micromegas chambers for the ATLAS Muon Spectrometer upgrade to extend the tracking capability to the rates foreseen in HL-LHC. I participated to tests on prototypes, developed a method to build a part of the detector (the drift panels) and I actively participate now to the construction. In this moment this is my main area of activity: since three years I have the responsibility of the construction of the SM1 chambers, that is the INFN contribution to the project. At the same time I co-coordinate the overall production.

8 Selected publications

Here the list of the 16 publications chosen to represent the scientific production in the last 10 years is given. The Journal Impact Factor of each paper is reported for the year of publication. The number of citations is taken from the Inspire database.

1. ATLAS Collaboration, "Commissioning of the ATLAS Muon Spectrometer with cosmic rays", *Eur.Phys.J. C*70 (2010) 875;
IF=3.248 N.citations=105
2. ATLAS Collaboration, "Observation of a Centrality-Dependent Dijet Asymmetry in Lead-Lead Collisions at $\sqrt{s_{NN}}=2.76$ TeV with the ATLAS Detector at the LHC", *Phys.Rev.Lett.* 105 (2010) 252303;
IF=7.621 N.citations=748
3. ATLAS Collaboration, "Measurement of the $W \rightarrow l\nu$ and $Z/\gamma^* \rightarrow ll$ production cross-section in proton-proton collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector", *JHEP* 1012 (2010) 060;
IF=6.049 N.citations=366
4. KLOE Collaboration, "Measurement of $\sigma(e^+e^- \rightarrow \pi^+\pi^-)$ from threshold to 0.85 GeV² using initial state radiation with the KLOE detector", *Phys.Lett.B*700 (2011), 102-110;
IF=3.955 N.citations=191
5. ATLAS Collaboration, "Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at LHC", *Phys.Lett.B*716 (2012), 1-29;
IF=4.569 N.citations=9628
6. KLOE and KLOE-2 Collaborations, "Precision measurement of $\sigma(e^+e^- \rightarrow \pi^+\pi^-\gamma)/\sigma(e^+e^- \rightarrow \mu^+\mu^-\gamma)$ and determination of the $\pi^+\pi^-$ contribution to the muon anomaly with the KLOE detector", *Phys.Lett.B*720 (2013) 336-343;
IF=6.019 N.citations=143
7. ATLAS Collaboration, "Evidence for the spin-0 nature of the Higgs boson using ATLAS data", *Phys.Lett.B*726 (2013), 120-144;
IF=6.019 N.citations=665
8. ATLAS and CMS Collaborations, "Combined Measurement of the Higgs Boson Mass in pp Collisions at $\sqrt{s}=7$ and 8 TeV with the ATLAS and CMS Experiments", *Phys.Rev.Lett.* 114 (2015) 191803;
IF=7.645 N.citations=1401
9. ATLAS and CMS Collaborations, "Measurements of the Higgs boson production and decay rates and constraints on its couplings from a combined ATLAS and CMS analysis of the LHC pp collision data at $\sqrt{s}=7$ and 8 TeV", *JHEP* 1608 (2016) 045;
IF=6.063 N.citations=1005
10. ATLAS Collaboration, "Measurements of the Higgs boson production and decay rates and coupling strengths using pp collision data at $\sqrt{s} = 7$ and 8 TeV in the ATLAS experiment", *Eur.Phys.J. C*76 (2016) 1,6;
IF=5.331 N.citations=383

11. ATLAS Collaboration, "Muon reconstruction performance of the ATLAS detector in proton-proton collision data at $\sqrt{s} = 13$ TeV", Eur.Phys.J. C76 (2016) 5,292;
IF=5.331 N.citations=478
12. ATLAS Collaboration, "Search for new phenomena in dijet events using 37 fb⁻¹ of pp collision data collected at $\sqrt{s} = 13$ TeV with the ATLAS detector", Phys.Rev.D96 (2017) 5, 052004;
IF=4.394 N.citations=191
13. ATLAS Collaboration, "Measurement of the W-boson mass in pp collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector", Eur.Phys.J.C78 (2018) 2, 110;
IF=5.172 N.citations=121
14. ATLAS Collaboration, "Observation of $H \rightarrow b\bar{b}$ decays and VH production with the ATLAS detector", Phys.Lett.B786 (2018) 59-86;
IF=4.254 N.citations=22
15. T.Alexopoulos et al., "Performance of resistive-strip bulk micromegas detectors in view of the ATLAS New Small Wheel upgrade", Nuclear Instruments and Methods A937 (2019) 125-140;
IF=1.433 N.citations=0
16. T.Alexopoulos et al., "Construction techniques and performance of a full-sized prototype Micromegas chamber for the ATLAS muon spectrometer upgrade", Nuclear Instruments and Methods A (2019) in press;
IF=1.433 N.citations=0

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