

## Curriculum Vitae

### Personal informations:

Surname: Di Micco                      Name: Biagio  
Birthdate: 27/03/1978                  Place of birth: Neaples

### Curriculum:

12/2000-04/2002      Research activity at CERN in the CHORUS experiment for the search of neutrino oscillation (CERN supervisor prof. Biagio Saitta). I worked on the alignment and calibration of the CHORUS hadron spectrometer;

14/11/2001                      Graduated in Physics "Magna cum Laude" (110/110 e Lode) at the University of Naples "Federico II"

Master thesis: "Kinematic measurements in the CHORUS experiment for the search of neutrino oscillations"  
Supervisor: Prof. Paolo Strolin (Università di Napoli) and prof. Biagio Saitta (Università di Catania);

01/2002 - 29/03/2005      Phd in physics: Phd thesis: "Measurement of the branching ratio of the decay  $\eta \rightarrow \pi^0 \gamma \gamma$  and upper limit on the decay  $\eta \rightarrow 3\gamma$ " Supervisor: prof. F. Ceradini (Università Roma Tre ).

Research activity in the KLOE experiment: data acquisition, data reconstruction, calibration of the calorimeter;

01/2005-03/2005 Post-doc position (art. 2222) at the "Laboratorio Nazionale di Frascati" in the KLOE experiment for the measurement of the  $\text{Br}(\eta \rightarrow \pi^0 \gamma \gamma)$ ;

01/04/2005 -31/07/2005 Fellowship for abroad studies given by "Fondazione Angelo Della Riccia" at the Karlsruhe Institut fuer Kernphysik, for research activity on the  $f_0$  contribution to the cross section  $e^+e^- \rightarrow \pi^0 \gamma \gamma$  ;

01/04/2005-31/12/2007 Post-doc contract (Assegno di Ricerca) at the Physics Department of Roma Tre University for research activity on data analysis in the KLOE experiment;

03/01/2008 -03/01/2010: Post-doc position (Assegno di Ricerca) at the INFN Roma Tre for research activity about "Study of K and  $\eta$  mesons decays with the KLOE experiment".

11/01/2010-31/01/2010: Post-doc position at the Physics department of Roma Tre University for research activity on meson decays produced in electron-positron interaction at DAFNE;

01/02/2010-31/01/2011: Post-doc position at Roma Tre University for "Production of elementary particles at colliders" working in the ATLAS experiment at LHC.

01/02/2010-31/01/2011: I had an associate position at CERN (INFN CERN associate program) in the ATLAS experiment for "Calibration of the tracking of the muon spectrometer of the ATLAS experiment and analysis of muons of high  $p_T$  produced in heavy quarks and W and Z bosons".

01/02/2011-31/01/2013 I had a research fellowship position at CERN (CERN research fellow) for the duration of two years in the ATLAS experiment, working mainly in the search and discovery of the Higgs boson in the WW final state.

04/2012 - Researcher position at Roma Tre University.

### Experiments and research interests.

2002-2010 KLOE experiment at the Frascati Phi factory DAFNE: Light meson hadronic physics and scalar mesons.

2011-Today ATLAS: Higgs boson search and discovery in the WW channel, measurements of properties and production mechanism in the WW channel.

### Coordination responsibility

01/01/2005-31/12/2008 I was convener of the analysis group on Hadronic Physics of the KLOE experiment.

03/2011- 09/2012 I was MC responsible for the Higgs group, for the preparation and definition of the signal and background samples for the Higgs boson search and discovery in all decay channels.

01/10/2012- 31/09/2013 I was convener of the HSG3 group working on all the aspects related to the search and measurements of the Higgs boson in the WW decay channel.

3/2012-4/2014 ATLAS contact person for the gluon fusion subgroup of the LHC Higgs cross section working group.

#### **Edited papers (paper for which I was editor, corresponding author or main contributor).**

- 1) ATLAS Collaboration, "Observation and measurement of Higgs boson decays to WW with the ATLAS detector", accepted by PRD (2014) [[arXiv:1412.2641](https://arxiv.org/abs/1412.2641)] [Editor, Analysis setup and optimization]
- 2) ATLAS Collaboration, "Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC" [Phys. Lett. B 726 (2013) 88] [Analysis setup and optimisation of the WW channel, convener of the H->WW group]
- 3) ATLAS Collaboration, "Evidence for the spin-0 nature of the Higgs boson using ATLAS data" [Phys. Lett. B726 (2013) 120] [signal samples production, WW background treatment, convener of the H->WW group]
- 4) ATLAS Collaboration, "Observation of a New Particle in the Search for the Standard Model Higgs Boson with the ATLAS Detector at the LHC" [Phys. Lett. B716 (2012) 1] [Signal and background samples production, WW background normalisation and uncertainty, MC responsible of the Higgs group]
- 5) ATLAS Collaboration, "Search for the Standard Model Higgs boson in the  $H \rightarrow WW^* \rightarrow l\nu l\nu$  decay mode with  $4.7 \text{ fb}^{-1}$  of ATLAS data at  $\sqrt{s} = 7 \text{ TeV}$ " [Phys. Lett. B716 (2012) 62] [Background normalisation and uncertainties]
- 6) ATLAS Collaboration, "Search for the Higgs boson in the  $H \rightarrow WW^* \rightarrow l\nu l\nu$  decay channel in pp collisions at  $\sqrt{s} = 7 \text{ TeV}$  with the ATLAS detector" [PRL 108 (2012) 111802] [Background normalisation and uncertainties]
- 7) ATLAS Collaboration, "Measurements of the electron and muon inclusive cross-sections in proton-proton collisions at  $\sqrt{s} = 7 \text{ TeV}$  with the ATLAS detector" [Phys. Lett. B707 (2012) 438] [For muons: analysis setup and running, production of the final results, editor of the paper]
- 8) B. Di Micco, *et al.*, " $\eta, \eta'$  mixing angle and  $\eta'$  gluonium content extraction from the KLOE  $R_F$  measurement", Eur. Phys. J. A38 (2008) 129 (selected contribution from Hadron 07 papers with peer review) (B. Di Micco corresponding author);
- 9) KLOE collaboration, "A global fit to determine the pseudoscalar mixing angle and the gluonium content of the  $\eta'$  meson", JHEP 0907 (2009) 105 (corresponding author);
- 10) KLOE collaboration, "Precise measurements of the  $\eta$  and the neutral kaon meson masses with the KLOE detector" JHEP 0712 (2007) 073 (corresponding author);
- 11) KLOE collaboration, "Upper Limit On The  $\eta \rightarrow \gamma\gamma\gamma$  Branching Ratio With The Kloe Detector"; Phys. Lett. B591 (2004) 49-54 (corresponding author);
- 12) KLOE collaboration, "Upper Limit On The  $\eta \rightarrow \pi^+\pi^-$  Branching Ratio With The Kloe Detector; Phys. Lett. B 606 (2005) 276-280 (main analysis author);

#### **Contribution in volume.**

1) Diglio S, Di Micco B et al., Handbook of LHC Higgs cross sections: 2. Differential Distributions. p. 122-133, Geneva Scientific Information Service, ISBN:978-92-9083-371-0, doi: 10.5170/CERN-2012-002.

2) De Florian D, Di Micco B et al., Handbook of LHC Higgs cross sections: 3. Higgs properties. p 20-50, Geneva Scientific Information Service, ISBN: 978-92-9083-289-5, doi: 10.5170/CERN-2013-004.

#### **Seminars**

- 1: CERN, EP/PP seminars "Study of Phi meson radiative decays at Kloe,  $\eta/\eta'$  mixing angle and  $\eta'$  gluonium content", CERN - Geneva 28-09-2010
- 2: Laboratorio Nazionale di Frascati, LNF-Italy: "Event Generators for the Higgs Boson Search at the LHC", Frascati 16-05-2012
- 3: The Galileo Galilei Institute for Theoretical Physics: "Updated (HPC) Higgs results - ATLAS" - Arcetri, Florence - 08-10-2012
- 4: Università degli Studi di Roma Tre: "Misura degli accoppiamenti dell'Higgs e implicazioni su modelli di nuova fisica nell'esperimento ATLAS" - Roma (Italy) 01-04-2014
5. The University of Texas: "Higgs Physics at Run-1 and prospects" - Arlington (Texas - US) 05/03/2015

## Conference talks

- [1] “Higgs 125 GeV”, B. Di Micco at “The LTS1 2014 - Workshop on the Long Term Strategy of INFN-CSN1. The next 10 years of accelerator based experiments.”, La Biodola, Italy - May 22-24, 2014
- [2] “Combinations of Results of Higgs Productions in all decay channels at LHC.”, B. Di Micco in Proceedings of “The 49<sup>th</sup> Rencontres de Moriond: “2014 QCD and High Energy Interactions”, edited by: E. Augé, J. Dumarchez and J. T. T. Vãn, La Thuile, Aosta Valley, Italy - March 22-29, 2014
- [3] “Search for the Standard Model Higgs boson in the  $H \rightarrow WW \rightarrow l\nu l\nu$ ,  $lvqq$  decay modes with the ATLAS detector”, B. Di Micco in Proceedings of “The XXXVI International Conference on High Energy Physics”, ICHEP 2012, Melbourne, Australia - July 4-11, 2012 PoS (ICHEP2012) 044
- [4] “ATLAS Standard Model Results.”, B. Di Micco at “Beyond the Standard Model: Results with the 7 TeV LHC Collision Data”, Trieste, Italy - September 19, 2011
- [5] “KLOE results on light meson properties”, B. Di Micco in proceedings of “The 2009 Europhysics Conference on High Energy Physics”, Krakow, Poland, 16 - 22 July 2009, Pos (EPS-HEP 2009) 046
- [6] “Calibration and performances of the KLOE calorimeter”, B. Di Micco in proceedings of the “10th International Conference on Instrumentation for Colliding Beam Physics (INSTR08)”, Novosibirsk, Russia, 25 February - 5 March 2008, Nucl. Instrum. Meth. A598 (2009) 239;
- [7] “Scalar mesons couplings to pions and kaons with KLOE.”, B. Di Micco et al. in Proceedings of the “Symposium on Meson Physics: extended COSY-11 collaboration meeting”, Krakow, Poland, 1-4 October, 2008, Acta Phys. Polon. Supp. B2 (2009) 113.
- [8] “Measurement of the pseudoscalar mixing angle and the eta-prime gluonium content with the KLOE detector”, B. Di Micco in Proceedings of the “Symposium on Meson Physics: extended COSY-11 collaboration meeting”, Krakow, Poland, 1-4 October, 2008, Acta Phys. Polon. Supp. B2 (2009) 63;
- [9] “KLOE results on light meson spectroscopy”, B. Di Micco in proceedings of “International Workshop on e+e- collisions from Phi to Psi”, LNF - Italy, 7-10 April, 2008, Nucl. Phys. Proc. Suppl. (2008) 181;
- [10] “Determination of the BR ratio  $R_\Phi = \text{Br}(\Phi \rightarrow \eta'\gamma)/\text{Br}(\Phi \rightarrow \eta\gamma)$  and measurement of the  $\eta$  mass at KLOE” in proceedings of “XII International Conference on Hadron Spectroscopy- Hadron 07”, Frascati, Italy, 8-13 October, 2007 Ed. L. Benussi et al., Frascati Physics Series Vol. XLVI (2007), pp: 465-472;
- [11] “Recent KLOE results”, B. Di Micco in proceedings of the “13<sup>th</sup> Lomonosov Conference on Elementary Particle Physics: Particle Physics on the EVE of LHC”, Moscow, Russia, 23-29 August, 2007 ed. Alexander Studenikin, World Scientific, p. 282;
- [12] “ $\eta$  physics and  $\Phi$  radiative decays at KLOE”, B. Di Micco, in proceedings of “QCD and High Energy Hadronic Interactions 2007” (Moriond QCD 2007), La Thuile, Italy, 17-24 March, 2007 edited by Etienne Augé, Bolek Pietrzyk and Jean Tran Thanh Van, The Goi Publishers – 2007;
- [13] “A new FLUKA simulation of the KLOE calorimeter”, B. Di Micco et al., in proceedings of “10th Topical Seminar on Innovative Particle and Radiation Detectors”, Siena, Italy, 1-5 October 2006, Nucl. Phys. Proc. Suppl. 172 (2007) 243;
- [14] “KLOE results on  $\eta$  and  $\eta'$  physics”, B. Di Micco in proceedings of 33<sup>rd</sup> International Conference on High Energy Physics – ICHEP'06, Moscow 26 July – 2 August 2006, editor: A. Sissakin, G. Kozlov, E. Kolganova published by World Scientific;
- [15] “The  $\eta \rightarrow \pi^0\gamma\gamma$ ,  $\eta/\eta'$  mixing angle and the  $\eta$  mass measurement at KLOE”, B. Di Micco in proceedings of “Eta05 Workshop on Production and Decay of  $\eta$  and  $\eta'$  Mesons”, 15-18 September 2005, Jagellonian University, Cracow, Poland Acta Phys. Slov. 56 (2005) 403-409;

[16] “Light meson spectroscopy with the KLOE experiment”, B. Di Micco in proceedings of “32<sup>nd</sup> International Conference of High Energy Physics (ICHEP 04)”, Beijing, China, 16-22 August 2004”;  
ed. By H. Chen, D. Du, W. Li, C. Lu Hackensack, World Scientific, 2005 2<sup>nd</sup> Volume, hep-ex/0410072;

[17] “Progress on  $\Phi$  radiative decays with the KLOE experiment”, B. Di Micco in Proceedings of “DAFNE 2004: Physics at Meson Factories”, LNF-Frascati, Italy 7-11 June, 2004, Frascati Physics Series Vol. XXXVI;

[18] “ $\eta$  decays studies with KLOE”, B. Di Micco in “Mini-Proceedings of the Fourth International Workshop on Chiral Dynamics: theory and experiment (CD2003)”, University of Bonn, Germany - 8-13 September, 2003 (hep-ph/0311212);

[19] “The  $\eta \rightarrow \pi^0 \gamma \gamma$  branching ratio and the  $\eta$  mass measurement.”, B. Di Micco in proceedings of “The Second International Workshop on Eta Meson Physics”, Peniscola, Spain, 10-11 May, 2007 (arXiv:0710.1809v1);

#### **Talks at workshops**

[1] “ATLAS Jet-Veto Study in RUN-1 and Wishlist for RUN-2”, B. Di Micco in “Higgs (N)NLO MC and Tools Workshop for LHC RUN-2”- CERN, Geneva, 17-19 December, 2014

[2] “ggF”, B. Di Micco in “The 7th Workshop of the LHC Higgs Cross Section Working Group”, CERN, Geneva, 5-6 December, 2012.

[3] “Higgs exclusive channels: WW”, at “The 5th Workshop of the LHC Higgs Cross Section Working Group”, LAL, Orsay, 21 November, 2011.

#### **Posters**

“Measurement of the inclusive muon differential cross-sections with the ATLAS detector at LHC”, PoS EPS-HEP 2011.

The XXI International Europhysics Conference on High Energy Physics, July 21-27, 2011, Grenoble, France

#### **Membership of international physics networks**

01/2003- 12/2007 Member of the “ $\eta$  physics network”: International network between theoretical and experimental physics that works on production and decays of  $\eta$  mesons. It is part of the “Hadron Physics” EU Project financed by the FP6 program;

01/2009-01/2012 Member of the “Primenet- Meson Physics in Low energy QCD”, belonging to the HadronPhysics2 project financed by the FP7 EU program.

#### **Research activity**

##### **Present activity (Measurement of the Higgs couplings using the WW channel).**

I am actually working in the ATLAS experiment of the Large Hadron Colliders. I just finished the analysis of the RUN 1 LHC data for the measurement of the Higgs production channels with the  $H \rightarrow WW$  production channel.

I worked on the ggF and VBF production channels being editor of the paper on the observation of the Higgs boson in the WW channel, and working mainly on the statistical interpretation of the results, the estimation of the theoretical uncertainties on the gluon fusion signal acceptance in both the ggF and VBF channels,

the estimation of the uncertainties on the WW background normalisation, and the design and optimisation of the analysis in both the ggF and VBF. I am actually contributing to the editing of the paper for the VH production channel, where I worked mainly on

the statistical treatment and the combination with the ggF and VBF channels.

I am also member of the Editorial Board for the measurement of the tH production in the multi leptonic final state, channel that is dominated by the decay of the Higgs boson to WW).

##### **Higgs search and discovery in the $WW \rightarrow l\nu l\nu$ channel.**

Starting from the year 2011 I worked in the search for the Higgs boson in the  $H \rightarrow WW \rightarrow l\nu l\nu$  channel. The analysis is based on the search for two isolated leptons and high missing  $E_T$  from the undetected neutrinos. The main

backgrounds are the non resonant WW production  $pp \rightarrow WW \rightarrow l\nu l\nu$ , the top pair production  $pp \rightarrow t\bar{t} \rightarrow W^+ W^- b\bar{b}$ . In order to reject the top background and to separate regions with different signal over background ratio (allowing to

improve the analysis sensitivity), the data sample is divided in jet multiplicity bin, selecting jets with  $p_T > 25$  GeV.

The irreducible WW background is rejected applying cuts on the azimuthal angle of the lepton pair ( $\Delta\phi_{ll}$ ) and on the invariant mass of the lepton pair  $m_{ll}$ . In fact the spin 0 nature of the Higgs boson and the V-A structure of the weak interaction in the W decay favour small opening angle and so small  $\Delta\phi_{ll}$  and  $m_{ll}$ . These variables will be called topological in the following.

At the beginning of 2011 I worked mainly in the event scanning of the interesting candidates to identify the source of observed excesses, in particular studying the lepton quality (in particular the muons) and the performances of the algorithm looking for jet from primary vertex (the so called Jet Vertex Fraction algorithm). Then I worked on the cut optimisation, in particular the definition of the MET cut and of the topological variables.

At middle of 2011 I started to look in particular at the normalisation of the WW background and the uncertainty related to its estimation. Being it an irreducible background its yield must be predicted from theory or extrapolated from control regions defined using the topological variables mainly affected by theoretical uncertainties. Therefore I worked in particular on the estimate of the theoretical uncertainty rising from a direct estimate of the background in jet bins and an extrapolation from jet binned control region. The definition of the background normalisation were primary linked to this study. For the low mass Higgs, an high  $m_{ll}$  ( $>80$  GeV) control region is completely signal free and allows a safe normalisation of the WW background in for each jet multiplicity bin. This allows to reduce the uncertainty coming from the jet binning that are both purely theoretical (being the jet multiplicity largely affected by scale uncertainty) and experimental like the jet energy scale. At high mass, the signal shifts at higher value of  $m_{ll}$  (due to the higher mass and the higher momenta of the leptons) contaminating the background region, therefore an absolute normalisation of the WW yield is more appropriate in order to preserve an adequate signal acceptance.

The results of this study were also part of intensive discussion with the theory community inside the LHC Higgs Cross Section working group, and were reported in the second volume of the LHC Cross Section Working Group report. It has been published in the first large exclusion range of the Higgs boson from the ATLAS experiment in the most interesting range allowed by the electroweak fit excluding the Higgs boson in the range  $145 \text{ GeV} < m_H < 206 \text{ GeV}$  at 95% C.L., where the low sensitivity at high mass is mainly due to the choice, in this paper, to use a similar normalisation strategy for the WW background at high mass and at low mass. The high mass approach were changed in the second relevant publication in this channel where the search was completed on the full 2011 collected dataset excluding an Higgs boson in the range  $133 \text{ GeV} < m_H < 261 \text{ GeV}$ . The WW was normalised using the MC yield thanks the proper evaluation of the theoretical error on the exclusive jet yield of the WW process. The expected exclusion for a SM Higgs boson was  $127 \text{ GeV} < m_H < 233 \text{ GeV}$ . The higher exclusion limit respect to the observed was due to an excess of events at  $1\sigma$  level in the low mass region. These results were presented by myself at the ICHEP 2012 conference.

During the 2012 I continued to work mainly on theoretical aspects related to the Higgs boson search inside the WW group, and followed closely the analysis to identify problems and help in providing solutions. I was editor of the internal note regarding theoretical uncertainties and aspects of the Higgs boson search from both the signal and the background prospective, I evaluated the uncertainty related to the main background estimated from MC and correction factors like WW,  $W\gamma$  and  $W\gamma^*$ . I became ATLAS contact for the Higgs cross section working group, responsible to provide solutions agreed by the ATLAS and CMS collaborations, in particular regarding the gluon gluon fusion subgroup. In particular we defined the prescription for the utilisation of the ggF cross sections using the Complex Pole Scheme for the Higgs width in the whole mass range, for the utilisation of the Higgs pT provided at NLO+NLL in the Powheg MC and the utilisation of the finite heavy quark correction in the gg loop.

In this period I was also MC responsible for the Higgs group, responsibility that consists in choosing the most appropriate generators for the signal and background process, the definition of efficient filters for the simulation of the background and the submission of the relevant requests to the production group.

This work has been an important contribution to the paper in which an almost  $6\sigma$  deviation from the null signal hypothesis has been made public by the ATLAS collaboration (4). The excess in the decay channels  $\gamma\gamma$ , ZZ and WW was compatible with the expectation of a SM Higgs boson of mass 126 GeV. The WW channel has the better accuracy in the determination of the signal strength  $\mu = \sigma_{\text{measured}} / \sigma_{\text{expected from SM}}$ . The  $l\nu l\nu$  decay channel dominates the sensitivity and the observed excess in the WW channel.

In September of 2012 my contribution to the Higgs search in the WW channel has been recognized by the collaboration that nominated myself convener of the Higgs subgroup working in the WW channel for the end of 2012 and 2013. The mandate of the group was to measure the properties of the observed boson in the WW channel, the observation of further production channel (VBF, WH/ZH) and the search for heavier Higgs like boson decaying to WW. At the Moriond QCD conference the results of the HSG3 group in the search for the Higgs boson were presented. An observed excess of  $4\sigma$  has been reported combining the 0, 1 and 2 jet channels, while a VBF signal of  $2.5\sigma$  has been observed. Moreover the spin  $2^+$  minimal coupling model has been excluded at  $> 95\%$  C.L. Combining the WW result

with the  $\gamma\gamma$  results a VBF observation at  $3.1\sigma$  has been reported. The set of WW results, produced under my personal coordination and responsibility, together with the  $\gamma\gamma$  and ZZ channels, give a clear identification of the observed excess as the Higgs boson responsible of the electroweak symmetry breaking mechanism, as published in the Higgs production combination paper and the determination of the spin and parity of the Higgs boson (paper 2) and 3 )

### **Measurement of the muon inclusive differential production cross section**

In the first year of my activity in ATLAS I worked on the study of the performance of muon reconstruction, working at the validation of the first W and Z candidate and on the measurement of the inclusive muon cross section.

The last furnishes the differential production cross section of muons in pp interaction as a function of the muon transverse momentum in the range 4-100 GeV. The region  $p_T < 20$  GeV is dominated by the B and C meson decays, while the high  $p_T$  region is dominated by the W and Z decays. Characteristic of the measurement in the high  $p_T$  region has been to measure the cross section without isolation cuts on the muons, that suppresses the b and c quark contribution, and without further selection cuts dependent from peculiar production and decay mechanism of the signal (like missing  $E_T$  in the W). This has allowed to reduce the systematics due to the theory uncertainties. The measurement has been compared with QCD model at the NLO + NLL accuracy, through the FONLL framework, and to MC predictions from Powheg+Pythia, Powheg+Herwig and Pythia. The accuracy of the measurement, at level of 10% in the main part of the range, has allowed to probe in particular the NLL resummation in QCD in the heavy quark production, being the data well compatible with NLO+NLL and in disagreement with the central value of pure NLO calculation. This has been possible thanks to the exploration of the high  $p_T$  spectrum ( $p_T > 30$  GeV) where the deviation between the NLO+NLL and NLO calculation becomes larger. A deep discussion with theoretician has been part of this work, in order to obtain the needed theoretical predictions from the FONLL framework, that can be recognised in the acknowledgement to myself in the relevant paper (CERN-PH-TH-2011-227). The analysis has been published in Phys. Lett. B, I was one of the editors of the paper inside the ATLAS collaboration and wrote the sections regarding the muons in particular. My work concerned the study of all the aspects of the measurement, in particular the measurement of the trigger efficiency, the data driven background determination, the combination of all the ingredients to extract an unfolded cross section, the analysis of the data and the comparison with the theoretical models. The measurement has been presented in several conferences by the ATLAS collaboration in 2011, in particular it was presented in a poster at EPS2011 by myself, whose proceedings have been published, and presented by myself at the "Beyond the Standard Model: Results with the 7 TeV LHC Collision Data".

### **Experimental activity in the KLOE experiment.**

Before joining the ATLAS experiment I worked in the KLOE experiment at the Frascati phi factory DAFNE. I was convener of the Hadron physics group of KLOE and worked on the measurement of the  $Br(\eta \rightarrow \pi^0 \gamma \gamma)$ , the measurement of the  $\eta$  mass, the extraction of the  $\eta$ 's gluonium content and the search for C and P violating interactions in the  $\eta \rightarrow \gamma \gamma \gamma$  and  $\eta \rightarrow \pi^+ \pi^-$  decays.

### **Experience in hardware activity.**

From 2006 to 2008 I worked in a research project for the development of a lead scintillating fiber calorimeter read by multi-anodes photomultiplier tubes (Hamamatsu R7600 M16, R8900-M16): "Calorimetro a fibre scintillanti con lettura a immagine e risoluzione al di sotto di un nanosecondo per la fisica delle particelle elementari", research project of Ministero dell'Istruzione, Università e ricerca (<http://webusers.fis.uniroma3.it/~dimitico/prin2006>). The results have been presented at the conferences indicated in the relative section.

### **Didactic activity:**

2003- Corso di Esercitazioni per "Elettromagnetismo II", Università Roma Tre;

2003- Corso di Esercitazioni per "Introduzione alla Fisica Nucleare e Subnucleare", Università Roma Tre;

2004 – Corso di Esercitazioni per "Elettromagnetismo II", Università Roma Tre;

2004- Corso di Esercitazioni per "Introduzione alla Fisica Nucleare e Subnucleare", Università Roma Tre;

2005 – Corso di Esercitazioni per "Introduzione alla Fisica Nucleare e Subnucleare", Università Roma Tre;

2006 – Corso di Esercitazioni per "Laboratorio di Calcolo", Università Roma Tre;

2007 – Corso di Esercitazioni per "Tecniche Sperimentali in Fisica Nucleare e Subnucleare", Università Roma Tre;

2008 – Corso di Esercitazioni per "Fisica delle Particelle Elementari", Università Roma Tre;

2012-13: Lectures for "Fisica delle Particelle Elementari" (Physics of Elementary Particles), Università Roma Tre-

(Department of Mathematics and Physics);

2013-14 Corso di Esercitazioni per “Fisica nucleare e subnucleare”, corso di Laurea in Fisica; esercitazioni corso “Elementi di Fisica”, corso di Laurea in Ottica e Optometria;

2013-14, 2014-2015: Professor of the course: “Thermodynamics” - ARCADIA University College of Global Studies - at Department of Mechanical Engineering, Università Roma Tre;

2014-15: Esercitazioni corso “Elementi di Fisica Generale II”.

#### **Graduate student supervision**

- I. I. V. Bortolotto, “Misure su un prototipo di calorimetro a segmentazione fine”, relatori prof. F. Ceradini, dott. B. Di Micco.
- II. II. S. Troisi, “Lettura di un calorimetro a fibre scintillanti con fotomoltiplicatori multianodati”, relatori prof. F. Ceradini, dott. B. Di Micco.
- III. G. Silli, “Ricerca del Decadimento del Leptone Tau in Tre Muoni Mediante l’Analisi dei Dati Raccolti dall’Esperimento ATLAS al LHC”, relatore B. Di Micco.

#### **Phd students supervision.**

1. “Precision Higgs boson Coupling Measurement with the  $H \rightarrow WW$  decay with the ATLAS detector at LHC”, Hee Yeun Kim, University of Texas at Arlington (Texas, USA), 5 Marzo 2015 and member of the PHD committee

#### **Full publication list.**

<https://inspirehep.net/search?p=find+a+Di+Micco>