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## CURRICULUM VITAE ET STUDIORUM

Name: Giulia Manca  
Nationality: Italian  
Place and date of birth: Cagliari, Italy, 10<sup>th</sup> March, 1974  
Civil status: Married, two children

### STUDIES

- 2003** : DPhil<sup>1</sup> University of Oxford, Oxford, UK. Thesis: “Measurement of  $R \equiv \sigma B(p\bar{p} \rightarrow W \rightarrow e\nu)/\sigma B(p\bar{p} \rightarrow Z^0 \rightarrow ee)$  in proton anti-proton collisions at  $\sqrt{s} = 1.96$  TeV”. Advisers: Peter Renton, Young-Kee Kim.
- 1999** : Master degree in Physics, University of Cagliari, Cagliari, IT: Thesis: “Measurement of the  $\bar{\nu}_\mu$  flux in the *Wide Band* neutrino beam for the CHORUS experiment at CERN”; 110/110 *magna cum laude*. Adviser: Biagio Saitta.

### POSITIONS

- since October 2016** : Associate professor at the University of Cagliari, Italy; LHCb Group.
- April 2015-September 2016** : Fixed time researcher (DR2) , CNRS, Laboratoire de l’Accélérateur Linéaire d’Orsay, France; LHCb Group.
- March 2012-March 2015** : Lecturer at the University of Cagliari, Italy; LHCb Group.
- November 2008 - March 2012** : Assegno di ricerca University of Cagliari, Italy; LHCb.
- September 2007- November 2008** : Ricercatore art.23 at I.N.F.N. Cagliari, Italy; LHCb.
- March 2006-September 2007** : PPARC Fellow at the University of Liverpool, UK; CDF/ATLAS.
- January 2004 - March 2006** : Research Assistant University of Liverpool, UK; CDF.
- September - December 2003** : Research Assistant University of Oxford, UK; CDF experiment.

### GRANTS AND LEADERSHIP POSITIONS

- May 2021-23** : Convener of the LPCC Heavy Ion group at CERN for the LHCb experiment, a physics working group meant to discuss the items relative to heavy-ion physics which are of interest across the four major CERN experiments.
- June 2019-22** : Co-spokeperson of the JRA1-LHC-Combine Work Package of the European Research Council “INFRAIA” grant STRONG-2020, "The strong interaction at the frontier of

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<sup>1</sup>Title equivalent to Ph.D..

knowledge: fundamental research and applications", with colleagues from France, UK, Switzerland, Germany and other European countries. The grant has been funded through the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093 for 10 millions' euros and will last three years.

- January 2015-June 2021** : Recipient (Principal Investigator) of the European Research Council Consolidator Grant 2014, with the project "Exploring Matter with Precision Charm and Beauty Production Measurements in Heavy Nuclei Collisions at LHCb" hosted by CNRS (at the Laboratoire de l'Accélérateur Linéaire d'Orsay, France). The grant started in April 2015 and has been recently extended.
- December 2018** : Principal Investigator of the Regione Sardegna grant for fundamental research SPINFix, "Probing transverse SPIN and polarization effects in collisions of proton and heavy nuclei beams on a Fixed target with the LHCb experiment at CERN". Ranked above threshold (third ex-quo) but not funded.
- February 2018** : Among the recipients of the grant from Fondazione Sardegna named "Quarkonium at LHC energies". The project lasts two years.
- since September 2015** : Member of the LHCb Operation Planning Group.
- March 2014-2016** : Member of the LHCb Speaker Bureau.
- 2011-March 2014** : Convener of the B-hadrons and Quarkonium Physics Working Group at LHCb. Responsible of the coverage, revision and publication of all analyses on Quarkonium and B-hadrons within the LHCb experiment. These include production and properties measurements and searches for new exotic states. I organised several workshops and collaborated with several theorists on this subject. I am also in charge of the publication on HEPDATA of the results published in my group. As Working Group convener I am a member of the Physics Planning Group, the LHCb directive body.
- 2011-2017** : LHCb representative at the International "Quarkonium Working group" since March 2011. This international collaboration organises regular meetings and writes reviews on Quarkonium physics. It includes theorists as well as experimentalists from different collaborations.
- 2010-2011** : Convener of the Quarkonium Physics Working Sub-Group.
- 2006-2007** : Convener of the Supersymmetry (SUSY) working group in the CDF experiment. Responsible of the coverage, revision and publication of all analyses of Supersymmetry within the CDF experiment. I organised workshops and collaborated with several theorists in regard of this matter.
- 2004-2007** : Leader of the "multi-lepton" group, coordinating all analyses involving lepton signatures in searches for New Physics at CDF.
- 2003-2006** : Responsible of the "Electron Task Force" Working Group, in charge of the identification and reconstruction of electrons and photons, measuring trigger and identification efficiencies for the CDF experiment.

#### **OTHER RESEARCH RESPONSIBILITIES**

- Since 2018** : Member of the International Advisory Committee for the Hard Probes International series of Conferences.
- 2017-2018** : Member of the Organising Committee for the Quark Matter 2018 Congress, Venice (IT), 13-19 May 2018. Convener of the Heavy Flavour and Quarkonia sections.
- since 2015** : Referee for the European Physics Journal C (EPJC) and International Physics Journal : Advances in High Energy Physics.

- since 2010** : Referee for the International Physics Journal : Journal of High Energy Physics (JHEP).
- since 2017** : Member of the “100 women against stereotypes” and the Academia.net experts’ databases.
- since 2019** : Referee for the Reserarch Fundation - Flanders (FWO) for projects of fundamental scientific research in the Flanders.
- September 2013-September 2014** : Organiser of the Particle Physics seminars at the Istituto Nazionale di Fisica Nucleare, Cagliari (Italy).
- March 2013** : Convener of the “Quarkonium Production” session of the workshop “Charmonium in pp collisions”, Laboratoire de l’Accélérateur Linéaire d’Orsay, France, 6-8 March 2013.
- March-September 2013** : Co-organiser, chair and convener of the “Heavy Quarkonium” session of the “QCD@LHC2013” conference, DESY (Germany), 2-6 September 2013.
- 2010-2012** : Responsible for the analysis “ $\Upsilon$  production at LHCb”.
- 2010-2012** : “Shift leader” and “Data Manager” expert at LHCb, a responsible for on-line running of the LHCb detector at CERN during continuous data taking of the experiment. Expert “on-call” for maintenance of the Muon system at LHCb, including general troubleshooting for the detector on-line operation.
- June 2012** : Chair of the session “Heavy Flavour and QCD” of the conference “24<sup>th</sup> Rencontres de Blois, Particle Physics and Cosmology”, Blois, France, 27 May-2 June 2012.
- 2008, April** : Co-organiser of the Congress “Incontri di Fisica del B”, Cagliari, 3-4 April 2008.
- 2006, May** : Co-organiser of the "Mini Workshop on Interdisciplinary Approach to constrain Low-Energy SUSY Models ", Fermilab, Batavia (IL), USA, 19 May 2006.
- 2006-2008** : Responsible for the generation and simulation of events for all groups of Physics Beyond the Standard Model within the CDF experiment.
- 2005-2008** : Responsible of the monitoring systems of the CDF experiment for five weeks a year during the data taking.
- 2003-2007** : Responsible for the “SiliMon” Silicon Efficiency Monitoring in the control room of the CDF experiment.
- 2001-2006** : “Data-acquisition and monitoring accelerator control expert” in the CDF control room during the initial period of data taking of the experiment (“*commissioning run*”, October 2001), and in the following periods.
- 2001-2004** : Expert on-call for Level3 trigger software during the CDF detector data-taking. Involved in building and validating Level3 executables, localising and solving software failures, troubleshooting for detector on-line operation.

#### MAIN DIDACTIC ACTIVITIES

- September 2015-present** : Scientific responsible for Francesco Bossù, Yanxi Zhang, Michael Winn, Albert Bursche, Shanzhen Chen, Benjamin Audurier, Jiayin Sun post-docs hired at LHCb within the ERC project EXPLORINGMATTER.
- since October 2017** : Supervisor of Samuel Belin and Roman Litvinov, PhD students at the University of Cagliari.
- September 2017-February 2018** : Supervisor of Francesca Puddu, undergraduate student at the University of Cagliari, thesis with title : “Studies of  $\Upsilon$  production in pPb collisions at  $\sqrt{s} = 8.16$  TeV at LHCb”.
- 2014,15,17** : Supervisor of USA undergraduate students, winners of D.O.E.-I.N.F.N. summer

student exchange program to work in Cagliari for two months (D.Urdaneta, H.Pikhartova, S.E.Park).

**since March 2018** : Responsible of the “Electromagnetism and Waves” course (part II) for second year Mathematics students at the department of Mathematics and Informatics, University of Cagliari, Italy.

**since March 2017** : Responsible of the “Physics and Scientific Method” course for first year Informatics students at the department of Mathematics and Informatics, University of Cagliari, Italy.

**November-December 2016** : Responsible of the laboratory course “Physics” for the students of Scienze dell’educazione, second year, at the University of Cagliari, Italy.

**May-June 2015** : Responsible of the course “Complementi di Fisica Moderna (Fisica delle Particelle Elementari)” for the teachers’ training programme (T.F.A.) at the University of Cagliari, Italy.

**October 2012-March 2015** : Responsible of the “Electromagnetism and Waves” course (part I) for second and third year students at the department of Mathematics and Informatics, University of Cagliari, Italy.

**October 2014-March 2015** : Responsible of the “Electromagnetism and Waves” course for second year students at the department of Chemistry, University of Cagliari, Italy.

**May-July 2014** : Responsible of the course “Complementi di Fisica Moderna (Fisica delle Particelle Elementari)” for the teachers’ training programme (P.A.S.) at the University of Cagliari, Italy.

**May 2013-present** : Member of the directive committee to manage all the scientific laboratories facilities of the University of Cagliari.

**Autumn 2011** : Responsible of the exercises course of “Electromagnetism” for second year students at the department of Physics, University of Cagliari, Italy.

**September 2013-April 2015** : Scientific responsible for Bo Liu, winner of the INFN Post-doctoral Fellowship for foreigners to work on  $B_c$  production at LHCb.

**June-September 2013** : Supervisor of the undergraduate student David Urdaneta, from the University of California at Los Angeles, who worked in Cagliari with the DOE INFN summer student exchange program. The subject of his work was “Quarkonium studies at LHCb” and his results have been included in the internal note “Studies of  $\chi_b$  production at LHCb”. David concentrated on improving the selection of the photon and the fit of the invariant mass distribution by sophisticated techniques.

**2007-2008** : Co-supervisor of Master Degree Thesis “Cosmic Rays in the Muon System of the LHCb Experiment”, University of Cagliari (student: Liliana Mou). Liliana measured the efficiency of the Muon System using the data from the Cosmic Ray runs taken at LHCb in 2008. Her work was also documented the public LHCb note LHCb-PUB-2009-017.

**2003-2005** : Co-supervisor of Ph.D. Thesis “Search for New Physics in Tri-lepton events at  $\sqrt{s}=1.96$  TeV”, University of Liverpool (student: Martin Griffiths). Martin’s thesis work was on the search for the supersymmetric partners of the gauge bosons, chargino and neutralino, in the final state with three leptons and large missing transverse energy. He concentrated in final states containing electrons and his work is also documented in two CDF internal notes and two publications.

**2005-2007** : Tutor of a PhD student at the University of Liverpool (student: Nick Austin). His thesis was on Higgs searches in the channel  $H \rightarrow b\bar{b}$  in CDF.

### OTHER DIDACTIC RESPONSIBILITIES

- June 2021** : Referee for the Ph.D. thesis of Oscar Boente Garcia, University of Santiago de Compostela, Spain. Thesis title: “Analysis of charged particle production in proton-nucleus and proton-proton collisions at the LHCb experiment”.
- February 2021** : Referee for the Ph.D. thesis of Florian Damas, IMT Atlantique, Nantes, France. Thesis title: “Upsilon production in pp and PbPb collisions at  $\sqrt{s}=5.02$  TeV with ALICE at the LHC”.
- December 2017** : Referee for the Ph.D. thesis of Giuseppe Trombetta, Università degli studi di Bari, Italy. Thesis title: “Studies of  $J/\psi$  production in pPb events at ALICE”.
- December 2014** : Referee for the Ph.D. thesis of Emma Kuwertz, “A Search for Squarks and Gluinos in Final States with At Least Two Leptons with the ATLAS Detector”, Royal Institute of Technology, SE-106 91 Stockholm, Sweden. Thesis opponent.
- September 2014** : “Rapporteur” for the Ph.D. thesis of Maksym Teklishyn, “Measurement of the  $\eta_c(1S)$  production cross-section via the decay  $\eta_c(1S) \rightarrow p\bar{p}$ ”, Université Paris SUD and Laboratoire de l’Accélérateur Linéaire d’Orsay (CNRS), France.
- February 2014** : Referee for the Ph.D. thesis of Alexander Mazurov, Università degli studi di Ferrara, Italy. Thesis title: “Studies of  $\chi_b$  production at LHCb”.
- April 2013** : Referee for the Ph.D. thesis of Joel Bressieux, École Polytechnique Fédérale de Lausanne, Lausanne (Switzerland); thesis’ title: “Studies on X(3872) and Z(4430) Production at the LHCb experiment at CERN”. Part of the thesis jury.
- June 2012** : Referee for the Ph.D. thesis of Bo Liu, Tsinghua University, Beijing (China); thesis’ title: “Measurements of the B meson production cross-sections at LHCb”. Part of the thesis jury.
- June 2010** : One hour lecture on “The Muon System of the LHCb Experiment” for Ph.D. students belonging UK Institutions in the LHCb experiment.
- 2006-2008** : Supervisor of ten students within the SUSY group at CDF. Organiser of a series of lectures for them.

### OUTREACH

I participate regularly to the “European Reaserchers’ night” event at the end of the September, both with the Italian Institute of Nuclear Physics (I.N.F.N.) and University of Cagliari, where I explain my research to visitors and schools. I am among the responsables for the International Masterclass for high-school students at the University of Cagliari, where we participate both to the Women edition as well as the general edition (I mainly participate to the women edition). In this event a number of high-school students from the region Sardinia looked at the LHCb data to perform a physics measurement. I have been invited to a discussion on Modern Particle Physics at the Festival of Science in Cagliari (November 2018). I have also been invited to attend a debate on the role od Women in Science at the Science Festival in Cagliari in November 2017 (organised by the GiuLia journalists association). I have participated to the LHCb outreach activities being a guide for high-school students from Italy and UK at the Centre for European Reasearch (CERN) in Geneva, CH. I was invited to talk at the exhibition “Women in charge of the most powerful machine of the world”, a project cured by Elisabetta Durante, where I am represented and where I described the work of my colleagues and myself. I presented the Higgs boson discovery at the “Don Bosco” high school in Cagliari in Spring 2014, and I have explained the work of a physicist to kindergarten and primary pupils at the British school “Chatterbox” in Cagliari. In 2010 I was invited to co-host the talk show “Ritorno al Futuro” on the third national TV channel(Rai 3), but I declined due to incompatibility with my own research activities.

**CONTRIBUTIONS TO CONFERENCES***As Invited Speaker*

- 2020**, July: parallel talk “*Quarkonia photo-production and Z production in heavy ion collisions at LHCb*”, 40<sup>th</sup> International Conference on High Energy Physics (ICHEP), Valencia (Spagna), 29 July 2020.
- 2019**, January: plenary presentation “*Heavy Ion Physics Results from LHCb*”, International Winter Meeting on Nuclear and Subnuclear Physics, Bormio (IT).
- 2018**, October: parallel presentation “*Results in Proton-Lead Collisions at LHCb*”, Hard Probes International Conference, Aix-Les-Bains, (FR).
- 2017**, October: presentation “*Fixed target measurements and opportunities at LHCb and ALICE*”, Heavy Ion Workshop, Torino (IT).
- 2017**, September: plenary talk “*Physics of Heavy Ions with LHCb*”, Initial Stages Conference 2017, Krakow (PL).
- 2016**, September: presentation “*Heavy Ion Physics at LHCb*”, GDR QCD Working Group Meeting, Orsay (France).
- 2015**, September: plenary talk “*Prospects for Heavy Ion Physics at LHCb*”, XXV<sup>th</sup> Quark Matter conference, Kobe (Japan).
- 2015**, March: plenary talk “*b-hadron spectroscopy at LHCb*”, 29 Rencontres de Physique de la Vallée d’Aosta, La Thuile (Italia), 1-7 March 2015.
- 2014**, July: parallel talk “*LHCb results in proton-nucleus collisions at the LHC*”, 37<sup>th</sup> International Conference on High Energy Physics (ICHEP), Valencia (Spagna), 2-9 July 2014.
- 2013**, March: plenary talk “*b and c spectroscopy at LHCb*”, XL Rencontres de Moriond on QCD and High Energy Hadronic Interactions, La Thuile (Italy), 9-15 March 2013.
- 2013**, March: presentation (personal invitation) “*News from LHCb*”, Workshop on Charmonium Production and Decays, Laboratoire de l’Accélérateur Linéaire d’Orsay, France, 6-8 March 2013.
- 2012**, May: parallel talk “*Heavy Production and Spectroscopy at LHCb*”, Rencontres de Blois, 27-30 May 2012.
- 2012**, May: presentation “*Heavy Flavour Physics at LHCb : the present and the future*”, AFTER Meeting, Grenoble, 10 May 2012.
- 2012**, April: presentation (review talk) “*New Quarkonium results at the LHC*”, plenary session, Incontri di Fisica delle Alte Energie, Ferrara (IT).
- 2011**, June: presentation (review talk) “*Quarkonium Physics at the LHC*”, plenary session Physics at the LHC Conference, Perugia, 6-10 June 2011.
- 2011**, April: presentation (personal invitation) “*Upsilon production at LHCb*”, Workshop on Quarkonium Production, Vienna, 18-21 April 2011.
- 2010**, October: presentation (personal invitation) “*J/ψ production at the LHC*”, Seventh Meeting on B Physics, Laboratoire de l’Accélérateur Linéaire d’Orsay, France, 4-5 October 2010.
- 2010**, June: presentation “*Open Charm and Charmonium Production at LHCb*”, The International Workshop on Meson Production, Properties and Interactions MESON 2010, Krakow (Poland), 10-15 June 2010.
- 2008**, May: poster “*Cybersar: A Grid experience for LHCb*”, Conferenza Nazionale Italia e-science IES2008, Napoli (Italy), 27-29 May 2008.
- 2008**, March: presentation “*Risultati di Nuova Fisica a CDF*”, parallel session, Incontri sulla Fisica delle Alte Energie(IFA) VII, Lecce (Italy), 26-28 March 2008.

- 2007**, May: presentation “*Multi-lepton searches at CDF*”, The CDF Collaboration Meeting IN2P3 et University Pierre et Marie Curie, Paris, France, 27 May-3 June 2007.
- 2007**, May: presentation “*SUSY Analyses at CDF*”, The CDF Collaboration Meeting, Fermilab, 25-27 October 2007.
- 2006**, May: presentation (personal invitation) at Argonne Collider Workshop, “*Searches for Supersymmetry at CDF*”, Argonne National Laboratory, Argonne (IL), USA, 8 May 2006.
- 2005**, July: parallel talk “*Squark and Gluino Production at CDF*”, The 13<sup>th</sup> International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY05), IPPP Durham, UK, 18-23 July 2005.
- 2005**, March: plenary talk “*Supersymmetry Results at the Tevatron*”, XL Rencontres de Moriond on QCD and High Energy Hadronic Interactions, La Thuile (Italy), 12-19 March 2005.
- 2004**, April: presentation “*Supersymmetry Results at CDF*”, Exotic Signals at Hadron Colliders workshop, Durham, UK, 31 March-3 April 2004.
- 2004**, March: plenary talk “*Recent Electroweak Physics Results at CDF*”, XXXIX Rencontres de Moriond on Electroweak interactions and Unified theories, La Thuile (Italy), 22-28 March 2004.
- 2003**, April: presentation “*Risultati della fisica elettrodebole a CDF e DØ*”, parallel session Incontri sulla Fisica delle Alte Energie(IFAÉ) XV, Lecce (Italy), 23-26 April 2003.
- 2003**, April: presentation entitled “*Measurement of  $\sigma B(p\bar{p} \rightarrow W \rightarrow e\nu)$  and  $\sigma B(p\bar{p} \rightarrow Z^0 \rightarrow ee)$  at  $p\bar{p}$  collisions at 1.96 TeV at CDF*”, parallel sessions, American Physics Society Congress, 4-8 April 2003, Philadelphia(PA), USA.
- 2003**, January: presentation “*Measurement of  $\sigma B(p\bar{p} \rightarrow Z^0)$  in the electron channel*”, CDF Collaboration Meeting, Fermilab, Batavia, US, 23-24 January, 2003.
- 2002**, April: presentation “*Di-lepton signatures for SUSY at CDF*” (abstract 000127), Institute of Physics Congress 2002, Brighton (UK).
- 2001**, June: presentation “*A look at the data from a user perspective: Level3 - Production comparison*”, CDF Collaboration Meeting, Fermilab, Batavia, US, 30 May - 1 June, 2001.

#### INVITED SEMINARS

- 2016**, July: Santiago de Compostela University Seminar “*Heavy Ion Physics in LHCb*”, 5 July 2016.
- 2015**, May: Zurich University Seminar “*Results and Prospects for Heavy Flavour in LHCb*”, 15 May 2015.
- 2014**, February: Cincinnati University Colloquium “*Quarkonium results from LHCb*”, Cincinnati (USA), 27 February 2014.
- 2011**, June: Imperial College London “*Quarkonium results from LHCb*”, London, 10 June 2011.
- 2011**, March-April: Marseille, LAL and Annecy Seminars “*Quarkonium Physics at LHCb*”.
- 2008**, June: CERN EP Seminar “*Search for New Physics in tri-lepton events at CDF*”, CERN, Geneva, Switzerland, 17 June 2008.
- 2006**, October: Seminar “*Searching for SUSY at the Tevatron*”, University of Wisconsin, Madison, USA, 31 October 2006.
- 2006**, May: Fermi National Accelerator Laboratory Wine and Cheese Colloquium, “*Searches for Supersymmetry in Multi-leptonic Signatures at CDF*”, Fermilab, Batavia (IL), USA, 12 May 2006.
- 2006**, May: Seminar “*Searching for Chargino and Neutralino at the Tevatron*”, University of Cambridge, Cambridge, UK, 4 May 2006.

- 2006**, April: Seminar “*Searches for Supersymmetry at the Tevatron*”, University of Oxford, Oxford, UK, 25 April 2006.
- 2004**, April: presentation “*Supersymmetry Results at CDF*”, Exotic Signals at Hadron Colliders, Durham, UK, 31 March-3 April 2004.
- 2003**, June: Seminar “*W and Z Physics at CDF*”, University of Oxford, Oxford, UK, 10 June 2003.
- 2003**, April: Seminar “*Risultati della fisica elettrodebole a CDF*”, University La Sapienza of Rome, Rome (Italy), 18 April 2003.
- 2003**, March: University of Chicago, Chicago(IL), USA; Seminar “*Measurement of  $\sigma B(p\bar{p} \rightarrow W \rightarrow e\nu)$  and  $\sigma B(p\bar{p} \rightarrow Z^0 \rightarrow ee)$  at  $p\bar{p}$  collisions at 1.96 TeV at CDF*”.

## BRIEF SUMMARY OF RESEARCH ACTIVITY

The summary describes my research activities in the experiments CHORUS, CDF, ATLAS and LHCb, which I carried out while at different institutes (Cagliari, Orsay, Oxford and Liverpool) and laboratories (Fermilab and CERN).

### September 2007-present : LHCb and CDF Experiments

- Principal investigator of the EXPLORINGMATTER ERC project to start a Heavy Ion physics programme at LHCb. Studies of feasibility of the project, analysis of the first collected data, commissioning and reconstruction of the data, supervision of the group involved in this physics at Orsay and Cagliari within the LHCb groups. At the moment the group is involved mainly in the analysis of quarkonia and open charm production in the three proposed experimental setups, fixed target with SMOG, proton lead and lead lead collisions. Several publications in the years 2016-2021. Two currently in preparation.
- Measured the production cross section of the process  $pp \rightarrow J/\psi$  and  $pp \rightarrow \Upsilon$  at  $\sqrt{s} = 8$  TeV, with  $\Upsilon = \Upsilon(1S), \Upsilon(2S), \Upsilon(3S)$ , in the decay channel with two muons. Performed all the studies and calculated all the numbers for these measurements. Published in June 2013.
- Since March 2011 coordinator of the “B-hadrons and Quarkonium (B&Q)” Working Group at LHCb. Responsible of all analyses of this group (the B&Q group is at the moment the group with the largest number of publications at LHCb). I review the analyses from feasibility studies to publication, I act as contact person with theorists and hep-data phenomenologists, I write abstracts for conferences.
- Since March 2010 LHCb Liaison person for the international Quarkonium physics group. Member of the workshop organising committee of this group.
- Responsible of the analysis of the production cross section of the process  $pp \rightarrow \Upsilon$  at  $\sqrt{s} = 7$  TeV, with  $\Upsilon = \Upsilon(1S), \Upsilon(2S), \Upsilon(3S)$ , in the decay channel with two muons. Performed all the studies and calculated all the numbers for this measurement. Published in January 2012.
- Acceptance studies for the measurement of the production cross section for the process  $pp \rightarrow J/\psi$  in the di-muon decay channel at  $\sqrt{s} = 7$  TeV. Involved in the preliminary measurement of the cross section with the first set of data collected by the LHCb experiment. Results presented at international conferences. Work documented in one public and one internal LHCb analysis note. Published in March 2011.
- Studies of Data-Monte Carlo comparison with cosmic ray events and their contribution for the spatial alignment of the LHCb detector.
- Efficiency studies for the first station of the Muon system at LHCb with beam data and its impact on the trigger of the experiment.
- Performance studies on the Muon System of the LHCb experiment at CERN. Measurement of the efficiencies and the cluster size of the chambers. Worked on the time alignment of the system. Work documented in three LHCb Public Notes and one publication. Published in September 2010.
- Internal Referee for the analysis “Search for Anomalous Tri-linear Gauge Couplings in  $p\bar{p} \rightarrow ZZ/WZ \rightarrow \ell\ell jj$ ” at CDF.
- Author of the official Monte Carlo generator of Cosmic Ray events for the LHCb experiment. The software is part of the official software of the experiment. Responsible of the update and maintenance of the related software. Work documented in one internal LHCb note.
- Analysis of the first cosmic ray events at LHCb. Data quality studies for the muon detector.

### June 2006-September 2007: CDF and ATLAS Experiments

- Studies of conversion electron backgrounds to analyses searching for Supersymmetry in multi-lepton final states in ATLAS. Work documented in an ATLAS internal note.
- Member of the “TEVNPHWG” and “TEVEWK” groups for the combination of analyses of New Physics and Electroweak Physics of the CDF and DØ experiments at the Tevatron.
- In charge of the combination of all the analyses searching for New Physics in final states with

two or more leptons at CDF for the extraction of a limit on the production cross section of Supersymmetric particles and on their masses. Work published in Physical Review Letters. The best limit on the theoretical models considered to date. Collaborated with theoretical physicists to interpret the results in several different New Physics scenarios.

- Development of tools for the Supersymmetry group at CDF, including web pages and computing tools to be shared by the all group.
- Generation of Standard Model and Supersymmetry events with different Monte Carlo programmes. Simulation of these in the CDF detector. These samples are used by all physics groups of the experiment.
- Study of Next-to-Leading Order cross sections for Supersymmetric processes at the Tevatron.
- Finalised the analysis “Search for New Physics in the final state with three leptons and missing energy at CDF”. Work published in Physical Review D.

#### **September 1999-May 2006: CDF Experiment**

- Installation of the “new” *Central Pre-Radiator* detector, used for electron and photon identification and discrimination from hadrons. Analysis of the first data collected with this detector to identify possible installation problems. First proton-antiproton collision data collected with this sub-detector in December 2004.
- Optimisation of selection criteria and measurement of the efficiencies for the identification of high and medium energy leptons for the analysis “Search for New Physics in the final state with three leptons and missing energy at CDF”. Estimate of the rate at which multi-jet events can be reconstructed as leptons in a wide range of energies.
- Design, development and maintenance of a package to monitor the efficiency of the silicon detectors on the CDF experiment. The code ran on-line during the data taking of the experiment.
- Internal reviewer and editor of the analysis “Search for New Physics in the final state with two photons and missing energy at CDF”. Published in October 2004.
- Worked on the publication of the measurement of the cross section  $p\bar{p} \rightarrow W/Z$  in lepton decay channels  $(e, \mu)$ . Phys.Rev.Lett.94:091803,2005, J. Phys. G **34** (2007) 2457.
- D.Phil. thesis with the title: “Measurement of  $R \equiv \sigma B(p\bar{p} \rightarrow W \rightarrow e\nu) / \sigma B(p\bar{p} \rightarrow Z^0 \rightarrow ee)$  in proton anti-proton collisions at  $\sqrt{s} = 1.96$  TeV”; dissertation in July 2003.
- Advanced generator level studies for searches for Physics Beyond the Standard Model at the Tevatron. Investigation of the reach for these studies at CDF.
- Author of the on-line reconstruction code for electron triggers, used also for off-line analysis. Validation, monitoring and rate-studies of the correspondent data for all the triggers of the experiment involving electrons.
- Validation of on-line vs. off-line reconstruction algorithms during the first period of data taking (2001-2002) at the CDF experiment. The code was part of the on-line monitoring systems.
- Validation, monitoring and rate-studies of the exotic di-lepton triggers involving electrons and muons.
- Strong involvement in data stripping for making high purity secondary data-sets for all areas of physics at CDF.
- Co-author of a public package for data and simulation analysis (SUGRASCAN). Work documented in a CDF internal note.

#### **1997-1999: CHORUS Experiment**

- Worked on the measurement of the flux of  $\bar{\nu}_\mu$  in the *Wide Band* neutrino beam at CERN. • Involved in on-line running of CHORUS experiment at CERN.

#### **SCHOOLS**

**2007**, November: I.N.F.N. School for Grid Users, CNAF, Bologna (Italy).

**2001**, September: CERN 2001 European School of High-Energy Physics, Beatenberg (Switzerland).

**2000**, September: Rutherford Appleton Laboratory Summer School in Particle Physics, Abingdon (UK).

#### **PROGRAMMING EXPERIENCE**

C++, fortran, perl, Unix, Linux, html, python. Data Analysis: ROOT, PAW. GRID expert.

#### **LANGUAGES**

Fluent in Italian and English. Fair knowledge of French, Spanish and Dutch.

**PUBLICATIONS IN PHYSICS JOURNALS : GIULIA MANCA**

*As Main Author*

1. G. Manca [LHCb Collaboration], **“Quarkonia photo-production and Z production in heavy ion collisions”**  
PoS **ICHEP2020** (2020).
2. G. Manca [LHCb Collaboration], **“Quarkonia production in pPb collisions with LHCb,”**  
PoS **HardProbes2018** (2019), 141 doi:10.22323/1.345.0141
3. **Study of  $\Upsilon$  production in pPb collisions at  $\sqrt{s_{NN}} = 8.16$  TeV,**  
R. Aaij *et al.* [LHCb Collaboration],  
JHEP **1710**, 090 (2017); LHCb-CONF-2016-003 ; CERN-LHCb-CONF-2016-003.  
doi:10.1007/JHEP10(2017)090 [arXiv:1707.02750 [hep-ex]].
4. **Study of prompt  $D^0$  meson production in pPb collisions at  $\sqrt{s_{NN}} = 5$  TeV,**  
R. Aaij *et al.* [LHCb Collaboration],  
JHEP **1811** (2018) 194; LHCb-PAPER-2018-035 ;  
doi: 10.1007/JHEP11(2018)194 [arXiv:1810.07655 [hep-ex]].
5. **Prospects for Heavy Ion Physics with LHCb**  
G. Manca for the LHCb Collaboration [Quark Matter 2015 Proceedings]  
Nuclear Physics, Section A (2015)  
doi: 10.1016/j.nuclphysa.2016.03.038
6. **“Quarkonia production at LHCb,”**  
G. Manca,  
Int. J. Mod. Phys. A **29** (2014) 1430014.
7. **“Forward production of  $\Upsilon$  mesons in pp collisions at  $\sqrt{s} = 7$  and 8 TeV”**  
R. Aaij *et al.* [LHCb Collaboration],  
JHEP **1511** (2015) 103
8. **“Measurements of  $B_c^+$  production and mass with the  $B_c^+ \rightarrow J/\psi\pi^+$  decay”,**  
R. Aaij *et al.* [LHCb Collaboration],  
Phys. Rev. Lett. 109, 2012 (232001); arxiv: 1209.5634.
9. **“Production of J/ $\psi$  and  $\Upsilon$  mesons in pp collisions at  $\sqrt{s} = 8$  TeV,”**  
R. Aaij *et al.* [LHCb Collaboration],  
JHEP **1306** (2013) 064  
[arXiv:1304.6977 [hep-ex]].
10. **“Measurement of Upsilon production in pp collisions at  $\sqrt{s} = 7$  TeV”**  
R. Aaij *et al.* [LHCb Collaboration].  
Eur. Phys. J. C **72**, 2025 (2012)  
arXiv:1202.6579 [hep-ex]
11. **“Measurement of J/psi production in pp collisions at  $\sqrt{s}=7$  TeV”**  
R. Aaij *et al.* [LHCb Collaboration]  
Eur. Phys. J. C **71**, 1645 (2011)  
arXiv:1103.0423 [hep-ex]

12. **“First measurements of inclusive W and Z cross sections from Run II of the Tevatron collider”**  
D. Acosta *et al.* [CDF Collaboration]  
Phys.Rev.Lett.94:091803,2005.  
hep-ex/0406078.
13. **“Measurements of inclusive W and Z cross sections in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV”**  
A. Abulencia *et al.* [CDF Collaboration]  
J. Phys. G **34** (2007) 2457 [arXiv:hep-ex/0508029].  
arXiv:hep-ex/0508029
14. **“Search for chargino-neutralino production in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV with high pT leptons”**,  
T. Aaltonen *et al.* [CDF Collaboration],  
Phys. Rev. D **77** (2008) 052002, hep-ex/0711.3161.
15. **“Search for chargino-neutralino production in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV”**,  
T. Aaltonen *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **99**, 191806 (2007)  
arXiv:0707.2362 [hep-ex]
16. **“Search for Supersymmetry in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV Using the Tri-lepton Signature of Chargino-Neutralino Production”**  
T. Aaltonen *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **101**, 251801 (2008)  
arXiv:0808.2446 [hep-ex]
17. **“Search for anomalous production of diphoton events with missing transverse energy at CDF and limits on gauge-mediated supersymmetry-breaking models”**  
D. Acosta *et al.* [CDF Collaboration]  
Phys. Rev. D **71**, 031104 (2005)  
arXiv:hep-ex/0410053
18. **“Performance of the LHCb muon system with cosmic rays”**,  
M. Anelli *et al.* [LHCb Collaboration]  
JINST **5**, P10003 (2010)  
arXiv:1009.1963 [physics.ins-det]
19. **“Measurement of the  $J/\psi$  production cross section at  $\sqrt{s} = 7$  TeV in LHCb”**,  
P. Robbe *et al.*, LHCb-PUB-2010-010, September 2010.
20. **“Studies of Open Charm and Charmonium Production at LHCb”**  
G. Manca [LHCb Collaboration]  
arXiv:1008.3783 [hep-ex],  
International Journal of Modern Physics, Vol.**26**, Issue No. 3n04.  
*Proceedings of 11th International Workshop on Meson Production, Properties and Interaction (MESON 2010), Cracow, Poland, 10-15 Jun 2010*
21. **“New physics results at CDF”**,  
G. Manca [for the CDF Collaboration],  
Nuovo Cim. **123B**, 760 (2008).  
*Proceedings of IFAE 2008 (Incontri Di Fisica Delle Alte Energie 2008) 26-28 Mar 2008, Bologna, Italy.*

22. **“Supersymmetry results at the Tevatron”**

G. Manca [CDF and D0 Collaborations]

e-print Archive: hep-ex/0505056; FERMILAB-CONF-05-202-E.

*Proceedings of 40th Rencontres de Moriond on QCD and High Energy Hadronic Interactions, La Thuile, Aosta Valley, Italy, 12-19 Mar 2005*23. **“Electroweak physics results at CDF Run II”**

G. Manca [CDF Collaboration]

e-print Archive: hep-ex/0405060

*Proceedings of 39th Rencontres de Moriond on Electroweak Interactions and Unified Theories, La Thuile, Aosta Valley, Italy, 21-28 Mar 2004*24. **“Recent results in electroweak physics at the Tevatron”**

G. Manca [On behalf of the CDF and D0 Collaborations]

FERMILAB-CONF-04-014-E

*Proceedings of 15th Conference on High-Energy Physics (IFAE 2003), Lecce, Italy, 23-26 Apr 2003*25. **“Measurement of the ratio  $R = \sigma_W \cdot Br(W \rightarrow e\nu_e)/\sigma_Z \cdot Br(Z \rightarrow e^+e^-)$  in proton - anti-proton collisions at  $\sqrt{s} = 1.96$  TeV.”**

G. Manca

FERMILAB-THESIS-2003-29

*As a member of the ATLAS, CDF and LHCb Collaborations (includes the ones as main author)*The up-to-date list of my publications as a member of the ATLAS, CDF and LHCb collaborations can be found on my web page : <http://webca.ca.infn.it/gmanca/public/>