

CURRICULUM VITAE

- Since November 2010: Associate Professor at the Department of Physics, University of Torino.
 2002-2010: Researcher at the University of Torino.
 2001-2002: Post-doctoral contract at the University of Torino.
 1999-2000: Fellowship in Particle Physics at CERN, European Organization for Nuclear Research, EP division.
 1997-1998: Post-doctoral grant of the Istituto Nazionale di Fisica Nucleare.
 1997: Ph.D. in Physics with a thesis on the measurement of the luminosity in the DELPHI experiment.
 1993: *Laurea* in Physics with a thesis on the measurement of the $B^0\bar{B}^0$ mixing in the DELPHI experiment (final grade 110/110 *magna cum laudæ*)
 Thesis advisor prof. A. Romero, University of Torino.

RESEARCH ACTIVITY

My main field of interest is experimental high-energy physics, with focus on tests of the electroweak Standard Model at colliders. In 1993-2004 I worked at the DELPHI experiment at the electron-positron collider LEP at CERN. Since 1998 I am in the CMS experiment at the proton-proton collider LHC at CERN.

RESEARCH AND RESPONSIBILITIES IN THE DELPHI EXPERIMENT.

I started with working on the installation and on the commissioning of the electromagnetic calorimeter STIC [1] then shifting to physics analyses in the electroweak sector: measurement of the luminosity for the determining the lineshape of the Z boson [2], measurement of the rate of the gluon-splitting $g \rightarrow b\bar{b}$ [3], measurement of the forward-backward asymmetry in the production of b quark at the Z resonance for the determination of $\sin^2\theta_{W,eff}$ [4], study of the 4-fermion processes at centre-of-mass energies beyond the Z resonance [5–8].

Responsibilities:

- 1994-96: responsible of the on-line monitoring of the STIC detector during the data-taking;
 1995: representative of the Collaboration in the working group *Interaction Regions* of the CERN LEP2 workshop studying the methods for determining the position of the *beam spot* for the LEP data taking at $\sqrt{s}=200$ GeV;
 2000-04: co-convener of the *4f physics* working group.

RESEARCH AND RESPONSIBILITIES IN THE CMS EXPERIMENT.

I have been involved in all the steps of the experiment: R&D activity on the silicon strip tracking detector [9], construction of the detector itself [10], commissioning of the experiment with the first data collected [11] and finally physics analysis within The *Standard Model Processes - Physics Analysis Group* [12]. From 2009 to 2011 I served, with other two researchers, in the steering committee coordinating the contribution of the Italian Institutes in CMS to the physics analyses.

Responsibilities:

- 1999-2000: member of the group which defined the technical specifications of the silicon strip sensors of the Tracker and author of the corresponding section of the *Addendum to the Tracker Technical Design Report (CERN-LHCC-2000-016)* ;
 2004-05: local responsible in Torino of the production of the modules of the Tracker Inner Barrel (TIB) and of the Tracker Inner Discs (TID);
 2007-08: responsible of the description of the TID in the simulation and reconstruction software (CMSSW) of the CMS experiment;
 2009-10: co-convener of the Tracker alignment group;
 2011-12: main co-author of the measurement of the cross section for the production of b jets in association of a Z boson.

In 2006-07 I was co-convener of the working group *Experimental tools* in the workshop MCWS06 organized by the INFN to promote the collaboration between theorists and experimentalists in preparation of the LHC data-taking.

TEACHING ACTIVITY AND ACADEMIC SERVICES

- 2003-2010 teacher assistant for the course *Mechanics* (Physics, graduate level)
- 2003-2006 teacher assistant for the course *Waves, Fluids and Thermodynamics* (Physics, graduate level)
- 2004-2012 lecturer in *Elementary Particle Physics 2* (Physics, master level)
- 2011-2013 lecturer in *General Physics* (Computing Science, graduate level)
- 2013 lecturer in *Elementary Particle Physics 1* (Physics, master level)

Since 2005 I am the local responsible for the organization of the *Masterclass in Particle Physics* for the dissemination of fundamental research among the high school students (national project supported by Italian MIUR legge 6/2000 for 60 000 €).

Elected member of the Council (*Giunta*) of the Department of Physics, University of Torino.

Ph.D. THESIS SUPERVISED

- G.Cerminara (now at CERN)
- R.Bellan (now researcher RUTD/b at University of Torino)
- R.Castello (now research fellow at FNRS Louvain, Belgium)
- M.Musich (now post-doc at University of Torino)

Besides I have been the supervisor of 9 master's students.

SELECTED PUBLICATIONS

- [1] S.J. Alvsvaag et al. The small angle tile calorimeter in the DELPHI experiment. *Nucl.Instrum.Meth.*, A425:106–139, 1999. doi:10.1016/S0168-9002(98)01401-6.
- [2] P. Abreu et al. Cross-sections and leptonic forward backward asymmetries from the Z^0 running of LEP. *Eur.Phys.J.*, C16:371–405, 2000. doi:10.1007/s100520000392.
- [3] P. Abreu et al. Measurement of the rate of b anti-b b anti-b events in hadronic Z decays and the extraction of the gluon splitting into b anti-b. *Phys.Lett.*, B462:425–439, 1999. doi:10.1016/S0370-2693(99)00905-3.
- [4] J. Abdallah et al. Measurement of the forward backward asymmetries of $e^+ e^- \rightarrow Z \rightarrow b$ anti-b and $e^+ e^- \rightarrow Z \rightarrow c$ anti-c using prompt leptons. *Eur.Phys.J.*, C34:109–125, 2004. doi:10.1140/epjc/s2004-01708-6.
- [5] A. Ballestrero, R. Chierici, F.Cossutti, and E. Migliore. Four fermion simulation at LEP-2 in DELPHI. *Comput.Phys.Commun.*, 152:175–190, 2003. doi:10.1016/S0010-4655(02)00822-6.
- [6] J. Abdallah et al. Single intermediate vector boson production in e^+e^- collisions at $\sqrt{s} = 183$ GeV to 209 GeV. *Eur.Phys.J.*, C45:273–289, 2006. doi:10.1140/epjc/s2005-02419-2.
- [7] P. Abreu et al. Measurement of the ZZ cross-section in $e^+ e^-$ interactions at 183 GeV-189 GeV. *Phys.Lett.*, B497:199–213, 2001. doi:10.1016/S0370-2693(00)01346-0.
- [8] J. Abdallah et al. $Z \gamma^*$ production in e^+e^- interactions at $\sqrt{s} = 183$ -209 GeV. *Eur.Phys.J.*, C51:503–523, 2007. doi:10.1140/epjc/s10052-007-0339-y.
- [9] S. Braibant, N. Demaria, L. Feld, A. Frey, A. Furtjes, et al. Investigation of design parameters for radiation hard silicon microstrip detectors. *Nucl.Instrum.Meth.*, A485:343–361, 2002. doi:10.1016/S0168-9002(01)02120-9.
- [10] J.L. Agram, M.M. Angarano, S. Assouak, T. Bergauer, G.M. Bilei, et al. The silicon sensors for the Compact Muon Solenoid tracker: Design and qualification procedure. *Nucl.Instrum.Meth.*, A517:77–93, 2004. doi:10.1016/j.nima.2003.08.175.

- [11] S. Chatrchyan et al. Alignment of the CMS Silicon Tracker during Commissioning with Cosmic Rays. *JINST*, 5:T03009, 2010. doi:10.1088/1748-0221/5/03/T03009.
- [12] S. Chatrchyan et al. Measurement of the Z/γ^*+b -jet cross section in pp collisions at 7 TeV. *JHEP*, 1206:126, 2012. doi:10.1007/JHEP06(2012)126.