# *Curriculum Vitae*

Surname:        ALBERTO                Name:        Diego

Born in:        Torino, 25 May 1979.

Address:        via Cavour, n°18 - 10090 – Foglizzo, Torino  – email:   diego.alberto@polito.it

He has obtained:

- A degree in Ingegneria delle Telecomunicazioni, Politecnico di Torino (Sept. 2004) with a thesis on genomic signal processing: "*Analisi delle proprietà di sequenze di DNA*", written in Italian, a copy is available on-line at http://www.matematicamente.it .

- A degree in Physics, Università di Torino (April 2007) with a thesis on digital filtering applied to nuclear particle detectors: "*Filtraggio Digitale di Segnali Generati in Rivelatori di Particelle Nucleari*", presentation written in Italian, a copy is available on-line at http://www.matematicamente.it .

- *European* PhD in "Ingegneria Elettronica e Comunicazioni" at Politecnico di Torino. Thesis: *Digital Signal Processing applied to Physical Signals* (March 2011). The European title is a recognition given by the Europen University Association (EUA, http://www.eua.be/Home.aspx). A copy is available on-line at http://cdsweb.cern.ch/record/1341287. The PhD has been developed in collaboration with the General Physics Dept. – Università di Torino and INFN.

Work experience:

- June 2005 - March 2006: software engineer at Motorola Electronics Torino, mainly working on mobile phone of II and III generations, testing their codes and fixing the bugs.

- March - October 2006: holder of temporary research position at Politecnico di Torino for further investigation on DNA sequences properties.

- March 2007 - February 2008: holder of temporary research position in the CRTnano project at Università di Torino.

- March 2008 - February 2010: holder of temporary research position in the Panda project (FAIR, Germany) at Università di Torino.

- March 2010 - May 2010: Visiting PhD student at Cern (Geneva) working on the analysis of signals from the TPC of the Alice experiment.

- June 2010 - February 2011: holder of temporary research position founded by Associazione Sviluppo Piemonte (ASP) in the Panda project at Università di Torino.

- March 2011 - end July 2011: holder of temporary Co.Co.Pro contract founded by *GPS Standard*  in collaboration with Politecnico di Torino on FPGA implementation of DSP for radar applications.

He has been associated to Istituto Nazionale di Fisica Nucleare (INFN) since March 2008.

His main research activities are:

- R&D on UV photodetector using pCVD and sCVD diamond for trigger and the absolute time determination of the events in ICARUS & WARP LAr TPC;

- study and project of optimum and adaptive digital filtering algorithms for Particle Physics signals analysis (Programmi Quadro FP6_FP7/E.U. e Collaborazione PANDA @ FAIR);

- Digital Filters design on Feature Programmable Gate Array (FPGA);

- Spectral Estimation through Time-Frequency transforms of the Cohen's class applied to geophysics and to the study of climates of the past;

- Digital Signal Processing applied to medical corneal images.

He has won the first prize as the *best presentation* in section: Sezione Va - Fisica applicata (Applied Physics) at the XCV National Congress of the Italian Physical Society (S.I.F.) held in Bari, 28 Sept. – 03 Oct. 2009.

HW/SW knowledge: Matlab, Simulink, ISE, ModelSim, VHDL, C, C++.

Languages: Italian (mother tongue), English (PET passed with merit in March 1999).

----------------------------------------------- Scientific Publications ----------------------------------------------------

***Digital Signal Processing applied to Physical Signals***, D. Alberto, PhD thesis, Politecnico di Torino, Torino, March 2011, DOI: CERN-THESIS-2011-008, [http://cdsweb.cern.ch/record/1341287](http://cdsweb.cern.ch/record/1341287).

International Journals:

1. ***Optical transition-edge sensors single photon pulses analysis***, D. Alberto, M. Rajteri, E. Taralli, L. Lolli, C. Portesi, E. Monticone, R. Garello, M. Greco, to be published on IEEE Transaction on Applied Superconductivity, June 2011, DOI: 10.1109/TASC.2010.2087736.

2. ***Ti/Au Transition-Edge Sensors Coupled to Single Mode Optical Fibers Aligned by Si V-Groove***, L. Lolli, E. Taralli, C. Portesi, D. Alberto, M. Rajteri, E. Monticone, to be published on IEEE Transaction on Applied Superconductivity, June 2011, DOI: 10.1109/TASC.2010.2103352.

3. ***FPGA implementation of digital filters for nuclear detectors***, D. Alberto, E. Falletti, L. Ferrero, R. Garello, M. Greco, M. Maggiora, NUCLEAR INST. AND METHODS IN PHYSICS RESEARCH, A, 611: 99-104 Oct. 2009, DOI:10.1016/j.nima.2009.09.049.

4. ***Digital filters for nuclear particle detectors***, D. Alberto, M.P. Bussa, E. Falletti, R. Garello, M. Greco, IL NUOVO CIMENTO B - Basic topics: Special Issue, 125 B (5-6), p. 677-686 June 2010, DOI 10.1393/ncb/i2010-10860-0.

5. ***Digital Filtering for Noise Reduction in Nuclear Detectors***, D. Alberto, M.P. Bussa, E. Falletti, L. Ferrero, R. Garello, A. Grasso, M. Greco, M. Maggiora, NUCLEAR INST. AND METHODS IN PHYSICS RESEARCH, A, 594 (3): 382-388 Sept. 2008, DOI: 0.1016/j.nima.2008.06.032 -2008.

6. ***Effects of Extremely Low-Frequency Magnetic Fields on L-glutamic Acid Aqueous Solutions at 20, 40, and 60 µT Static Magnetic Fields***, D. Alberto, L. Busso, R. Garfagnini, P. Giudici, I. Gnesi, F. Manta, G. Piragino, L. Callegaro, G. Crotti, ELECTROMAGNETIC BIOLOGY AND MEDICINE, pp. 241-253, Sept. 2008, Vol. 27, ISSN: 1536-8378, DOI: 10.1080/15368370802344052.

7. *Effects of Static and Low-Frequency Alternating Magnetic Fields on the Ionic Electrolytic Currents of Glutamic Acid Aqueous Solutions*, D. Alberto, L. Busso, G. Crotti, M. Gandini, R. Garfagnini, P. Giudici, I. Gnesi, F. Manta, G. Piragino, ELECTROMAGNETIC BIOLOGY AND MEDICINE, pp. 25-39, March 2008, Vol. 27, ISSN: 1536-8378, DOI: 10.1080/15368370701878788.

International Conferences:

1. *CVD Diamond sensor for UV-photons*, L. Periale, D. Alberto, S. Bizzaro, G. Gervino, C. Palmisano, P. Picchi, submitted to the 6th International Conference on New Developments in Photodetection – Lyon, 4-8 July 2011.

2. *Optical transition-edge sensors single photon pulses analysis*, D. Alberto, M. Rajteri, E. Taralli, L. Lolli, C. Portesi, E. Monticone, R. Garello, M. Greco, IEEE Applied Superconductivity Conference - Washington D.C., 1-6 Aug. 2010.

3. *Ti/Au Transition-Edge Sensors Coupled to Single Mode Optical Fibers Aligned by Si V-Groove*, L. Lolli, E. Taralli, C. Portesi, D. Alberto, M. Rajteri, E. Monticone, IEEE Applied Superconductivity Conference - Washington D.C., 1-6 Aug. 2010.

4. *Epithelial, Bowman's layer, stroma and pachimetry changes with FD – OCT during orthokeratology,* M. Frisani, D. Alberto, A. Calossi, M. Greco, 1st EuCornea Congress – Venice, 17-19 June 2010.

5. *Digital Filtering of Particle Detector Signals ,* M. Greco, D. Alberto, M. Maggiora, S. Spataro, 17th IEEE Real Time Conference – Lisboa, 24-28 May 2010.

6. *Epithelial, Bowman's layer, stromal and corneal thickness changes during orthokeratology by SD-OCT ,* M. Frisani, D. Alberto, M. Greco, European Academy of Optometry and Optics 2010 – Copenhagen, 15-16 May 2010.

7. *Digital Filters for Noise Reduction in Nuclear Detectors*, D. Alberto, M.P. Bussa, E. Falletti, L. Ferrero, R. Garello, A. Grasso, M. Greco, M. Maggiora, Conference Record of RT '09. 16th IEEE-NPSS - Beijing, 10-15 May 2009, DOI: 10.1109/RTC.2009.5321959.

National conferences:

1. *Filtraggio adattativo su segnali da rivelatori di particelle*, XCVI Congresso Nazionale Società Italiana di Fisica (S.I.F.) - Bologna, 20-24 Sept. 2010.

2. *La tomografia a coerenza ottica FD-OCT per lo studio morfometrico delle diverse componenti della cornea,* M. Frisani, D. Alberto, M. Greco, A. Calossi, INOA - Istituto Nazionale Ottica Applicata CNR, Vinci, 7-8 Nov. 2009.

3. *Implementazione su FPGA di filtri digitali standard e adattativi per il trattamento di segnali da rivelatori di particelle,* XCV Congresso Nazionale Società Italiana di Fisica (S.I.F.) – Bari, 28 Sept. – 03 Oct. 2009. Winner of the first prize as the best presentation in section: Sezione Va - Fisica applicata (Sect. Va -Applied Physics).

4. *Comparazione tra filtraggio digitale standard ed adattativo per la riduzione del rumore nei rivelatori di particelle,* XCIV Congresso Nazionale Società Italiana di Fisica (S.I.F.) – Genova, 24 Sept. 2008

5. *Filtraggio Digitale di Segnali Generati in Rivelatori di Particelle Nucleari*, XCIII Congresso Nazionale Società Italiana di Fisica (S.I.F.) - Pisa, 24-29 Sept. 2007.


PANDA collaboration meetings:

1. *Signal Processing for Nuclear Detectors*, Panda DAQT Meeting - Bavarian Forest, 22-24 April  2009.

2. *Signal Processing on FPGA*, Panda DAQT Meeting – Darmstadt, 8-10 Dec. 2008.

3. *Improvements in Digital Filtering for Nuclear Detectors*, Panda DAQT Meeting – Torino, 18-19 June 2008.

4. *Digital Filtering in Nuclear Detectors*, Panda DAQT Meeting – Juelich, 18-19 March 2008.


Turin, 1st April 2011