Dario Barberis – Curriculum Vitae

Born on 26/11/1956 in Milan (Italy). Italian citizen.

Education:
- 1970-1975: Scientific High School "Vittorio Veneto", Milan (Italy). Scientific baccalaureat with final mark 60/60.
- 1975-1980: Physics course at the Physics Department of the University of Milan (Italy). Final thesis on "Preliminary study for an experiment on nucleon stability", supervisor Prof. E. Fiorini. Physics degree with final mark 110/110 cum laude.
- 1982-1982: PhD in Physics at the Physics Department of the University of Manchester (UK), with a grant from the University of Manchester. PhD thesis on "Photoproduction of Charmed F Mesons at the Omega Spectrometer", supervisor Dr. B. Dickinson.

Employment record:
- 1982-1985: Research Associate at the Physics Department of the University of Manchester (UK), based at CERN (Geneva, CH).
- 1985-1988: Research Fellow at CERN in Geneva (CH).
- 1988-1991: Wissenschaftlicher Mitarbeiter at the Physics Institute of the University of Heidelberg (DE), based at CERN (Geneva, CH).
- 1991-1992: Scientific Associate at the Nuclear Sciences Institute in Grenoble (FR).
- Since 1992: Researcher at the Physics Department of the University of Genoa (Italy). In 1999 and 2004-2005, on sabbatical leave at CERN in Geneva (CH).

Scientific Activities:
- 1980-1986: Experiments WA57 and WA69 to study photoproduction of heavy quarks (charm) using the Omega spectrometer at CERN:
    - development of a fast simulation program for electromagnetic showers in the "Olga" calorimeter;
    - optimisation of the $\pi 0$ and η reconstruction algorithm;
    - simulation of the photoproduction of F (Ds) mesons and their decays, including the calculation of the experimental acceptance and reconstruction efficiency;
    - search for the F mesons in the η-$(n\pi)$ decay modes and measurement of the product of production cross-section times branching ratios (or their upper limits);
    - development of the program to reconstruct trajectory and energy of the individually-tagged beam photons;
    - design, construction and operation of the first and second level trigger system, including the e+e-; pair veto;
    - improvements of the pattern recognition program for the Omega spectrometer, especially for high multiplicity events, and of the vertex reconstruction algorithm in the 60-cm long LH2 target;
    - organization of the reconstruction at CERN of 1/3 of the collected data (60 million events) and development of a database system to follow the reconstruction process in several computing centres;
    - since 1984, as contactman of the experiment at CERN, general organization and relation with CERN committees.

During this period I also collaborated to the data taking and analysis of experiments WA81 (electron and photon channelling along crystal axes) and WA83 (study of hadronic bremsstrahlung in γ-p interactions at 280 GeV/c), which used most of the experimental apparatus and the reconstruction software developed for experimentWA69.

- 1986-1988: Experiment WA82 for the study of hadronic production of heavy quarks (charm) using the Omega spectrometer at CERN:
    - development and operation of the first and second-level trigger system (NIM and MBNIM logic);
    - operation of the data acquisition system, development and adaptation of on-line monitoring programs;

- adaptation and development of the software used by the WA69 experiment, particularly for pattern recognition in the Omega spectrometer, particle identification in the RICH detector and shower reconstruction in the electromagnetic calorimeter.
- 1988-1992: Experiment WA89 for the study of hadronic production of baryons containing heavy quarks (charm and strangeness) using the Omega spectrometer at CERN:
    - coordination of the development of off-line reconstruction programs;
    - improvement of the pattern recognition program for the Omega spectrometer and adaptation to the WA89 geometry;
    - general organization as contactman of the collaboration at CERN.
- 1992-1996: Experiment WA92 for the study of hadronic production of mesons containing heavy quarks (beauty and charm) using the Omega spectrometer at CERN:
    - on-line monitoring of the entire apparatus;
    - on-line alignment of the silicon microstrip detectors (used by the secondary track second level trigger system) and run-by-run calibration of the drift chambers;
    - development of the track pattern recognition software and the software for the reconstruction of the event topology (vertex package);
    - selection of events with B mesons from the large background of events with secondary interactions in the detector material;
    - measurement of the B meson total and differential production cross-sections and of the production correlations between B and B-bar mesons;
    - analysis of the purely leptonic decays of the Ds meson.

During this period I also collaborated to data-taking and software development for experiments WA91 and WA102 (study of the central production of glueballs) and WA97 (study of the production of high transverse momentum hyperons and anti-hyperons in Pb-Pb interactions at 160 GeV/nucleon), which used large parts of the experimental apparatus and the reconstruction software that was developed for experiment WA92.

- Since 1996: Experiment ATLAS for the study of proton-proton interactions at very high energy:
    - definition of the geometry of the inner tracking detector and in particular of the pixel tracker;
    - simulation of events to study ATLAS performance in identifying jet flavour ("b-tagging");
    - editorial responsibility for the "B-tagging Performance" chapter of the ATLAS Physics Technical Design Report (1999);
    - organisation of the development of new ATLAS software, using modern technologies (such as the C++ language);
    - definition and first implementation of the quality control procedures for ATLAS software;
    - as ATLAS representative in the software committee of the CERN review of the computing needs of the experiment at the LHC accelerator (CERN-LHC Computing Review), study of the needs in human and financial resources of CERN and LHC experiments over next decade, evaluating the needs of the experiments and the market evolution of computing hardware..
- From March 2003 to February 2010 I was Computing Coordinator of the ATLAS experiment. As such, I have::
    - defined the computing model of the experiment and the necessary resources;
    - organised the development work of experiment software and computing infrastructure (over 200 people world-wide);
    - participated to the management of the ATLAS experiment as member of the Executive Board;
    - participated to the management of the WLCG (World-wide LHC Computing Grid) Collaboration that groups all computing centres that support LHC experiments;
    - defined the architecture of interfaces between experiment software and the Grid middleware used by ATLAS;
    - defined yearly the needs of computing capacity, in terms of CPU power and data storage, for ATLAS in all computing centres for the next years and reported their usage for the current and past years..
- Since March 2010 I am Database Coordinator for ATLAS and also coordinator of the Tier-3 working group in Italy. This work implies:

- optimisation of data access in databases (geometry, alignments, calibrations), for data analysis tasks;
- development of software for rapid access to single selected events and their extraction from the large amount of recorded events using an event index (TAG) stored in an Oracle database;
- definition of a model for final data analysis in local computing facilities (Tier-3) and integration with the global ATLAS computing model;
- tests of hardware and software configurations to optimise the usage of local computing resources for ATLAS data analysis.
- Since December 2011 I am responsible for information protection and data access control for the ATLAS experiment.
- At the end of 2011 I proposed a project to catalogue all events produced by ATLAS (EventIndex) and now I direct its development, based on NoSQL technologies (Hadoop/HBase). This project is partially funded through the Italian PRIN 2010-2011 fund.

Seminars and talks at international conferences:
- Experiment WA69:
  - Seminar at ISN Grenoble (France) on "Photoproduction and non-perturbative QCD", April 1991.
- Experiment WA82:
  - Talk at the International Symposium on Heavy Quark Physics, Cornell University, June 1989, on "Charm hadroproduction with an impact parameter trigger".
  - Seminar at FNAL on "First results of experiment WA82", June 1989.
  - Seminar at the Lebedev Physical Institute of the Soviet Union Academy of Sciences, Moscow (Russia), on "Charmed meson production in experiment WA82", September 1990.
  - Talk at the Conference on Heavy Quarks at Fixed Target, Frascati (Italy), May 1993, on "Charmed meson decays: an overview of recent results".
- Experiment WA92:
  - Talk at the Charm-2000 Workshop, FNAL, June 1994, on "A secondary vertex trigger for beauty search: results from the WA92/Beatrice experiment".
  - Talk at the Conference on Heavy Quarks at Fixed Target, FNAL, October 1998, on " Charm and beauty production in experiment WA92".
- Experiment ATLAS:
  - Talk at the Vertex-98 Conference, Santorini (Greece), September 1998, on "Performance of the ATLAS Vertex Detector".
  - Talk at the Beauty-99 Conference, Bled (Slovenia), June 1999, on "Performance of the ATLAS Inner Detector".
  - Talk at the Pixel-2002 Conference, Carmel (California), September 2002, on "Physics with 2nd Generation Pixel Detectors".
  - Seminar at the Cavendish Laboratory, University of Cambridge (UK), April 2004, on "ATLAS Data: from Bits to Histograms".
  - Talk at the CHEP'07 Conference, Victoria (Canada), September 2007, on "The ATLAS T0 Software Suite".
  - Seminar at the Instituto de Física Corpuscolar, University of Valencia (Spain), January 2008, on "Distributed Computing for the ATLAS Experiment".
  - Closing summary talk at the CHEP'09 Conference, Prague (Czech Rep.), March 2009.
  - Talk at the "Physics at Future Colliders 2009" Conference, Tbilisi (Georgia), October 2009, on "ATLAS Software & Distributed (Grid) Computing".
  - Talk at the "NorduGrid 2010" Conference, Ljubljana (Slovenia), May 2010, on "Computing for LHC Experiments".
  - Talk at the Europhysics Conference on High-Energy Physics HEP-EPS2011, Grenoble (France), July 2011, on "Distributed processing and analysis of ATLAS experimental data".
  - Talk at the "Nuclear Engineering and Computing Conference" NEC2011, Varna (Bulgaria), September 2011, on "Data handling and processing for the ATLAS experiment".

- Talk at the "International Symposium on Tools and Methods of Competitive Engineering" TMCE2012, Karlsruhe (Germany), May 2012, on "World-wide Distributed Computing for High-Energy Physics Experiments".

Scientific organisational roles:
- 1984-1988: contactman of experiment WA69 at CERN.
- 1990-1992: member of the CERN Computing resources allocation committee (CoCoTime).
- 1991-1992: contactman of experiment WA89 at CERN.
- June 1997 to September 2002: coordinator of the ATLAS b-tagging performance group.
- January 1999 to January 2003: coordinator of ATLAS Inner Detector software and member of the Inner Detector Steering Group and the Computing Steering Group.
- May 1999 to May 2001: coordinator of the ATLAS software quality control group.
- February to October 2000: ATLAS representative in the software committee of the CERN-LHC Computing Review.
- March 2003 to February 2010: ATLAS Computing Coordinator (and member of the ATLAS Executive Board and Collaboration Board).
- Since March 2010: ATLAS Database Coordinator and ATLAS-Italy Tier-3 Coordinator.
- Since December 2011: ATLAS Information Protection Officer.

Organization of conferences and workshops:
- Year 2000: member del local organization committee of the International Workshop on Semiconductor Pixel Detectors for Particles and X-Rays "Pixel2000", Genova (Italy), June 2000.
- Year 2004: member of the International Advisory Panel of the CHEP'04 conference (Computing in High Energy Physics), Interlaken (Switzerland), September 2004.
- Year 2005: member of the International Advisory Panel of the CHEP'06 conference (Computing in High Energy Physics), Mumbai (India), February 2006.
- Year 2007: member of the International Advisory Panel of the CHEP'07 conference (Computing in High Energy Physics), Victoria (Canada), September 2007.
- Year 2009: member of the International Advisory Panel of the CHEP'09 conference (Computing in High Energy Physics), Prague (Czech Republic), March 2009.
- Year 2010: member of the International Advisory Panel of the CHEP'10 conference (Computing in High Energy Physics), Taipei (Taiwan), October 2010.
- Year 2013: member of the Program Committee of the CHEP'13 conference (Computing in High Energy Physics), Amsterdam (NL), October 2013.

Teaching Activities:
- 1980-1982: Physics Department of the University of Manchester (UK): general physics laboratory for physics students.
- 1992-1996: Information Science Department of the University of Genoa (Italy): electronics laboratory for computer science students.
- 1996-1998: Chemistry and Natural Sciences Departments of the University of Genoa (Italy): physics laboratory for chemistry and environmental science students.
- 2000-2003: Information Science Department of the University of Genoa (Italy): general physics exercises for computer science students. Chemistry Department of the
- University of Genoa (Italy): physics laboratory for chemistry students.
- 2005-2009: Physics Department of the University of Genoa (Italy): computing laboratory for physics students.
- 2009-2010: Information Science Department of the University of Genoa (Italy): general physics exercises for computer science students.
- 2010-2012: Engineering Faculty of the University of Genoa (Italy): general physics exercises for students in civil and environmental engineering.
- 2011-2012: Physics Department of the University of Genoa (Italy): data acquisition and control laboratory for physics students.
- 2012-2014: Polytechnic School of the University of Genoa (Italy): general physics course for students in computational engineering.

Publications:

http://inspirehep.net/search?ln=en&ln=en&p=find+a+barberis,+d&of=htcv&action_search=Search&sf=&so=d&rm=&rg=100&sc=0

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