



Prof. Salvatore Costa

CV (brief)

Last update: 18 July 2019

Professor of Experimental Physics at University of Catania – Department of Physics and Astronomy “Ettore Majorana”.

Education

- Graduated in Physics with full marks and laude on 13 December 1977, defending a thesis on “Below-threshold photo-fission of ^{238}U ”.

Employment

- UniCT: Full Professor (as of 2 March 2018)
- UniCT: Associate Professor (1 November 2011 – 1 March 2018)
- LBNL: Visiting Researcher (1989-1993)
- UniCT: Researcher (17 April 1984 – 31 October 2001)
- CSFNSM: Fellow (1979-1983)

Managerial Roles

- President of the Quality Assurance Panel of the Physics and Astronomy Department of University of Catania (since March 2018).
- Former Deputy Director of the Physics and Astronomy Department of University of Catania (November 2016-October 2018).
- Former member of the Physics and Astronomy Department of University of Catania's Directorate Board (2007-2016).
- Former member of the Research Committee for Physical Sciences ("02") of UniCT (2004-2009).
- Former member (representing the Catania INFN Section) of the Commissione Scientifica Nazionale 1 of INFN (July 2015-June 2019).
- Former member of the INFN National Researcher's Council as Representative of the INFN-Catania researchers (2009-2010).
- Organization of scientific events such as International Conferences (CRIS1996, CRIS1998, CRIS2000, CRIS2002, CRIS2018), Collaboration meetings (e.g. EOS collaboration in 1996, CMS Pixel Workshop in 2013), official committee's meetings (INFN CSN1 multiple times).

Teaching experience

- 2009-present: **Laboratorio di Fisica II (A-L)** for the bachelor degree in Physics.
- 2003-2010: **Fisica I** and/or **Fisica II** for the bachelor degree in Mathematics.
- 2002-2003: **Fisica Generale II** for the bachelor degree in Information Technology.
- 2001-2002: **Laboratorio di Fisica Generale** for the bachelor degrees in Chemistry and Industrial Chemistry.
- 1999-2004: **Esperienze Didattiche di Fisica** for SISSIS.
- 1993-2001: Lab assistance in **Esperimentazioni di Fisica II (A-L)** for the bachelor degree in Physics.
- 1990-1991: **Esercitazioni di Fisica Generale I** for the bachelor degree in Physics.
- 1983-1988: **Esercitazioni di Fisica Generale II** for the bachelor degree in Physics.

Research activity, current and past

- Member of the JUNO collaboration (study of neutrino oscillations and neutrino mass hierarchy) at the Jiangmen Underground Neutrino Observatory (since 2018).
- Member of the Auger collaboration (study of cosmic ray spectrum, origin, nature) at the Pierre Auger Observatory (since 2017).
- Member of the CMS collaboration (search for the Higgs boson, supersymmetry, dark matter etc.) at the CERN LHC (since 2001).
- As member of the CMS experiment is one of the discoverers of the Higgs boson (July 2012).
- Has developed high managerial skills, by covering a relevant managerial position in the CMS experiment as Resources Manager of the Tracker project for 9 years (2009-2017). In this position has managed yearly budgets of about 1-2 M€ for the maintenance and operation of the detector as well as two upgrade detector construction projects worth 15 M€ and 100 M€, respectively.
- Is presently member of the Upgrade Office of the Italian component of the CMS Collaboration (since February 2019).
- Expert of detector design, construction, and test, has played key roles in the construction of the original CMS and of the so-called phase-1 upgraded Pixel detector, and is now involved with the design and prototyping of the so-called phase-2 upgraded Tracker detector.
- Expert of detector operation, has been responsible for control, safety and operation of the CMS Tracker detector (2008-2011), and then of the entire CMS experiment (2011 onwards).
- Before joining CMS was the key person of a long-lasting collaboration between INFN-Catania and several American groups in three collaborations:
 1. TRANSPORT (Measurements of as many cross sections as possible of heavy ions on hydrogen and helium targets to contribute to the construction of a database for the models of cosmic-ray transport through the interstellar medium, 1988-1991) at LBNL;
 2. EOS (study of nuclear matter under high density and temperature conditions and equation of state, 1991-1995) at LBNL;
 3. E896 (search for the elusive 6-quark particle H0, 1993-2000) at BNL.

- For these three experiments was the sole responsible for the control, operation (hardware- and software-wise), maintenance, calibration, data reduction and data analysis of a scintillator detector and was strongly involved also in more general tasks of the experiments.
- Earlier on, just after graduation (1977), had been involved in multiple applications of statistical thermodynamics to phenomenological studies in the fields of:
 1. solid state physics and biophysics (1978-1982);
 2. nuclear multi-fragmentation (1982-1986) - this work led to the publication of a famous paper [Il Nuovo Cimento A, **89** (1985) 1] where a procedure to determine the temperature of the multi-fragmenting source was proposed, which was then adopted by all groups working in the field worldwide.
- For several years (1981-1987) had also conducted standard nuclear physics measurements in two INFN laboratories: LNL and LNS.

Scientific Publications

Prof. Salvatore Costa is author of about 1000 scientific publications. The full list is maintained in the UniCT IRIS product catalogue: "[UniCT IRIS catalogue: Salvatore Costa](#)".