



Paolo Prati

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Education and training

1985

Master degree in physics

Università di Genova - Genova - IT

Academic experience

2010 - ONGOING

Professore associato SSD FIS/07

Dipartimento di fisica UNIGE - Genova - IT

2000 - 2009

Ricercatore universitario confermato SSD FIS/07

Dipartimento di fisica UNIGE - Genova - IT

1990 - 1999

Funzionario tecnico VIII qualifica funzionale

Dipartimento di fisica UNIGE - Genova - IT

Work experience

2012 - ONGOING

President of the management board of PMTEN srl

PMTEN srl - Genova - IT

Language skills

English

Proficient

Research interests

I'm an experimental physicist and I have devoted most of my research efforts to the development of innovative instruments and methods with a continuous attention to their application to the solution of real-world problems. In the last 20 years I have focused my research on the characterization of atmospheric aerosols (or atmospheric Particulate Matter, PM) and of their natural and anthropogenic sources. Since 1995, I've been directing the Laboratory for Environmental Physics

(<http://labfisa.ge.infn.it>) at UNIGE. In 2012, together another staff member and five young researchers, I have founded PM_TEN srl (<http://www.pm10-ambiente.com>), a start-up society devoted to the technological transfer of the outcomes of the research in environmental physics performed at UNIGE.

With my research activity, I contributed to the assessment of sampling techniques, laboratory analyses and data reduction methods addressed to source apportionment (i.e. quantitative determination of sources impact on PM levels). So far, I introduced in Italy the use of two-stage continuous streaker samplers for the identification of atmospheric pollution sources based on the temporal pattern of their elemental composition. This required the use and development of proper Ion Beam Analysis on low-energy particle accelerators and, in some cases, of optical techniques. I have designed and managed many projects/experiments addressed to PM characterization and source apportionment in several sites, among these (not quoting several INFN-CSN5 grants since the year 2000):

1998: coordinate research program “Techniques for atmospheric particulate analysis” funded by Italian National Council of Research, CNR, PI (budget: 40k€)

2002: the first PM10/PM2.5 sampling campaign in four major Italian towns (Florence, Genoa, Milan, Naples), PI (budget: 100k€)

2003: PM10/PM1 characterization campaign at the “remote” climatologic station of Monte Cimone (Italian Appennines, 2250 m a.s.l.), PI (budget: 90k€)

2004: first PM1 characterization campaign organized in the same period in three Italian cities (Florence, Genoa, Milan), local PI (budget: 30k€)

2003-2013: PM10, PM2.5 and PM1 source apportionment studies in Genoa commissioned by the Province of Genoa, PI (budget: 210k€)

2007-2010: development a new technique for the size-segregated apportionment of the particle number concentration. The approach is based on the contemporary use of optical particle counters and particulate matter samplers and can give the size distribution of chemical and/or elemental components of atmospheric aerosols in a complementary way to the standard method based on the multi-stage cascade impactors. PI (budget 60k€)

2010-2013: source apportionment studies through receptor models and chemical transport models in five European harbours (Barcelona, Marseille, Genoa, Venice and Thessaloniki) in the frame of the MED-APICE project; local PI (budget 306k€)

2010-2011: assessment of the impact of vehicular traffic to the air quality of the city of Genoa through numerical simulations in the frame of the MITA project (grant Municipality of Genoa), PI (budget 90k€)

2011-2012: development of a software for numerical simulations of air quality in the Regione Liguria as sub-contractor of the ALCOTRA-AERA project, PI (budget 130k€)

2012-2014: development of a new multi-wavelength optical technique for the determination of Black and Brown Carbon content in PM and campaigns in rural areas. The approach is presently exploited in collaboration with MPI-Mainz in the assessment of biomass burning and biogenic emissions in

the Amazonian site of Atto (Manaus-Brazil) PI (budget 50k€).

2014-June 2015: source apportionment study focussed to the PM emission of touristic maritime traffic in Barcelona, Marseille, Genoa, Venice and Thessaloniki in the frame of the MED-CAIMANs project, local PI (budget 130k€)

2016-2020: H2020-Eurochamp2020: Integration of European Simulation Chambers for Investigating Atmospheric Processes – Towards 2020 and beyond (budget 144k€)

The results of the experimental studies above quoted have been published in major international journals and represent a reference for the atmospheric aerosol composition and evolution in Italy. Some of them had an impact outside the strictly scientific environment: a campaign devoted to the assessment of atmospheric pollution produced by large harbors raised the public awareness of the problem in Genoa and triggered ideas and proposals for a sustainable development of one of the largest harbors of the Mediterranean Sea. I was appointed by Justice Courts to assess the impact of particularly dangerous plants: a huge steel smelter in Genoa, the famous marble quarries in Massa Carrara and a Chromium processing factory, one of the most dangerous plant in Europe, near Genoa.

I carried out researches in nuclear astrophysics too, in the frame of the LUNA (Laboratory for Underground Nuclear Astrophysics) project located in the international laboratory under the Gran Sasso mountain (Italy). LUNA is worldwide the sole (until 2017) deep-underground accelerator facility and it is managed by an international collaboration with about 50 researchers. The direct measurements of the cross section of nuclear reactions involved in astrophysical processes performed at LUNA were acknowledged as exceptional results in several review papers. Recently, the Italian Ministry of Research approved a 5.3 M€ project for the construction of a new underground facility based on a 3.5 MV ion accelerator to be devoted both to astrophysical and to multidisciplinary studies including atmospheric sciences (LUNA-MV). Since July 2015 I'm the spokesperson of the LUNA Collaboration and Principal Investigator of the LUNA-MV project.

I always carried out my research activity in the frame of national and international collaborations and in the last ten years I continuously had coordination and management responsibilities at several levels. So far, I have been the