

Marco Casolino

Born in Rome, 27/4/1970

Current position: Researcher, National Institute of Nuclear Physics, Rome (1999-)

Education: 1993 degree in Physics, Rome University of Tor Vergata
1997 PhD in Physics, Rome University of Tor Vergata

Teaching: 2000- present. Lecturer in Physics (Mechanics, Thermodynamics, Electromagnetism, Optics), Laurea in Fisica, University of Roma Tor Vergata

Awards: 1991: 'Enrico Persico' award, Accademia Nazionale dei Lincei, Roma
1995: Scientific activity award, Italian Physical Society

Member of Italian Physical Society, Cospar

Research Activity:

Balloon Flights:

1993 TS-93, Ft. Sumner (USA)

1994 Caprice-94, Lake Manitoba (CA)

1998 Caprice-98, Ft. Sumner

Devoted to the study of the antiparticle component in galactic cosmic rays.

Satellite experiments:

1993-1999 Cosmic ray detector NINA on board satellite Resurs01 n.4

1997-2001 Cosmic ray detector NINA-2 on board Italian Space Agency satellite MITA

Study of low energy (10MeV – 200 MeV) nuclear and isotopic component of galactic and solar cosmic rays at solar maximum.

1995-present: Magnet spectrometer PAMELA on board the Resurs-DK1 spacecraft (launched 15-06-2006)

Indirect search of dark matter through the study of positrons and antiprotons in cosmic rays. Study of proton and light nuclei component of cosmic rays of galactic, solar and secondary origin.

Space Station experiments:

1994-1998 Sileye-1

1995-2000 Sileye-2

Devoted to the study of the Light Flash phenomenon and radiation environment on MIR space station

2003-2005 Sileye-3/Alteino

2000-present: Altea facility (launched on 4-07-2006)

Study of human physiology, Light Flashes, cosmic ray radiation environment on board International Space Station

2004-2006: Lazio

Technological demonstrator study of Earthquake precursors in space

2005-present: PI of Altcrist experiment

ESA-Russia joint project devoted to the study radiation environment and shielding effectiveness of materials on board the Russian section of ISS. Expeditions 13 to 16 (current).

2003-present: Si-rad experiment.

Cosmic ray detector to be placed on the exterior of ISS in 2010 to study cosmic rays of galactic and solar origin.

Launch Campaigns: 2002 – Plesetsk (NINA2/MITA), Cosmos rocket

2005 – Baikonur (Lazio-Sirad), Soyuz rocket

2005 – Baikonur (Altcrist), Soyuz/Progress rocket

2006 – Baikonur (Pamela), Soyuz-FG rocket

2007 – Baikonur (Altcrist), Soyuz/Progress rocket

Selected publications:

- 1) Measurements of ground level muons at two geomagnetic locations, *Phys. Rev. Lett.* 83, 4241, (1999)
- 2) New measurement of the flux of atmospheric muons, *Phys. Rev.Lett.*, 82, 4757, (1999)
- 3) The Cosmic Ray Proton and Helium Spectra Between 0.4 and 200 GV, *Astrophys. Journ.*, 518, 457 (1999)
- 4) First mass-resolved measurement of high-energy cosmic-ray antiprotons, *Astrophys. Journ. Lett.* 534, L177, (2000)
- 5) The cosmic-ray electron and positron spectra measured at 1 AU during solar minimum activity, *Astrophys. Journ.* 532, 653, (2000)
- 6) The Cosmic-Ray antiproton flux between 3 and 49 GeV, *Astrophys. Jour.* 561, 787 (2001)
- 7) In-flight performances of SilEye-2 Experiment and cosmic ray abundances inside space station MIR, *Jour. Phys. G* 27, 2051 (2001)
- 8) Eye light flashes on the Mir Space Station, *Acta Astronautica*, 50,8 511 (2002)
- 9) Light Isotope Abundances in Solar Energetic Particles measured by the Space Instrument NINA, *Astrophys. Jour.*, 577, 513 (2002)
- 10) Geomagnetically trapped light isotopes observed with the detector NINA, *Jour. Geophys. Res.*, 107, 8-1 (2002)
- 11) The PAMELA Experiment on Satellite and its Capability in Cosmic Rays Measurements, *Nuc. Inst. Meth. A* 478, 114 (2002)
- 12) Energy spectrum of secondary protons above the atmosphere measured by the instruments NINA and NINA-2, *Annales Geophysicae*, 20, 10, 1693 (2002)
- 13) The Sileye-3/Alteino experiment on board the International Space Station, *Nuc. Phys. B* 113, 71 (2002)
- 14) High-energy deuteron measurement with the CAPRICE98 experiment, *Nuc. Phys. B* 113, 88 (2002)
- 15) Low energy solar and galactic cosmic rays at 1 au, *Int. Jour. of Mod. Phys. A*, 17, n.12 & 13, 1685 (2002)
- 16) The Sileye-3/Alteino Experiment for the Study of Light Flashes, Radiation Environment and Astronaut Brain Activity on Board the ISS, *Journ. Rad. Res.*, 47, S47-52 (2002)
- 17) The small satellite Nina-Mita to study galactic and solar cosmic rays in low-altitude polar orbit, *Adv. Space Res.* 31, 2, 351 (2003)
- 18) Altea: anomalous long term effects in astronauts. , *Adv. Space Res. Vol. 31, No. 1*, pp. 141-146, 2003
- 19) Study of the radiation environment on Mir space station with sileye-2 experiment, *Adv. Space Res. Vol. 31, No. 1*, pp. 135-140, 2003
- 20) Evidence of two Light Flash components caused by protons and heavy nuclei on board Mir Space Station, *Nature* 422, 680, (2003)
- 21) Cosmic ray observations of the heliosphere with the PAMELA experiment, *Advances in Space Research*, 37, 10, 1848-1852 (2006)
- 22) Pitch angle distribution of trapped energetic protons and helium isotope nuclei measured along the Resurs-01 No. 4 LEO satellite, *Annales Geophysicae*, 23, 2983–2987, (2005)
- 23) Shielding from cosmic radiation for interplanetary missions: Active and passive methods, *Radiation Measurements*, 42, 1, 14-23 (2007)
- 24) PAMELA – A payload for antimatter matter exploration and light-nuclei astrophysics, *Astroparticle Physics*, 27, 4, 296-315 (2007)
- 25) Inner Radiation Belt Source of Helium and Heavy Hydrogen Isotopes. *Advances in Space Research*, 41, 1, 86-91 (2008)