

COSMIC RAY MEASUREMENTS ON BOARD SPACE STATION MIR WITH SILEYE-2 EXPERIMENT

S. Avdeev (4), V. Bidoli (1), M. Boezio (9), W. Bonvicini (5), P. Carlson (9), **M. Casolino (1)**, G. Castellini (8), E. De Grandis (1), C. Fuglesang (9,10), G. Furano (1), A. Galper (3), A. Khodarovich (3), G. Mazzenga (6), A. Morselli (1), L. Narici (1), M. P. De Pascale (1), G. Percossi (1), P. Picozza (1), A. Popov (3), E. Reali (1), M. Ricci (6), W.G. Sannita (2), R. Sparvoli (1), P. Spillantini (7), A. Vacchi (5), N. Vavilov (3) and N. Zampa (5).

(1) Dept. of Physics, Univ. of Rome "Tor Vergata" and INFN Sez. Rome2, Italy, (2) DISM-Univ. of Genova, Genova, Italy and Dept. of Psychiatry, SUNY, Stony Brook, NY, USA, (3) Moscow State Engineering Physics Institute, Moscow, Russia, popov@sileye.mephi.ru/Fax: +095-323-9194, (4) Russian Space Corporation "Energia" by name Korolev, Korolev, Moscow region, Russia, (5) Dept. of Physics of Univ. and Sez. INFN of Trieste, Italy (6) L.N.F. - INFN, Frascati (Rome), Italy, (7) Dept. of Physics of Univ. and Sez. INFN of Florence, Italy, (8) IROE of CNR, Florence, Italy, (9) Royal Institute of Technology, Stockholm, Sweden, (10) European Astronaut Center, ESA, Cologne, Germany.

Casolino@roma2.infn.it fax +390672594647

SilEye-2 is a silicon detector telescope for the study of the causes of Light Flashes perception by astronauts. As a standalone device, it monitors in the short and long term the radiation composition inside the space station MIR. The cosmic ray detector consists of an array of 6 active silicon strip detectors which allow nuclear identification of cosmic rays up to Iron in an energy range from 50 MeV to 2 GeV. The device was operational for more than 1000 hours in the years 1998-2000, measuring also several Solar Particle Events (SPE). Particle flux abundance inside MIR depends from the point of the orbit (due to the geomagnetic cutoff) and can increase significantly during SPE. In addition, there are also particle interactions with the hull of the station which alter cosmic ray composition. In this work we present the in-flight performance of the device, cosmic ray abundance and flux measurements in solar quiet conditions and during SPEs.