



## **Charge particle and neutral cosmic ray component variations during the surface electric field disturbances connected with thunderclouds as observed at CASLEO in 2016-2017**

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The ground based cosmic ray installation constructed in the scope of scientific cooperation between the Lebedev Physical Institute, Russian Academy of Sciences (Moscow, Russia), Universidade Presbiteriana Mackenzie (São Paulo, Brazil) and Complejo Astronómico El Leoncito, CASLEO (San Juan, Argentina) is in continuous operation at CASLEO (San Juan, Argentina; coordinates 31 S, 69 W; height of 2550 m; the rigidity of geomagnetic cutoff of  $R_c \sim 9.8$  GV) since May 2015. This installation consists of charge particle detector (CARPET), three neutron detectors (ND), four modules of gamma-ray spectrometers (GAMMA) and electric field monitor. Experimental data obtained by these instruments allow to study cosmic ray modulation in different time scales, solar flares and solar proton events. In this paper we focus on analysis of variations of charge particle and gamma-ray fluxes observed during the strong variations in the surface electric field connected with thunderclouds. More than 25 such events were recorded during 2016-2017. We present main characteristics of these events. Obtained results are compared with available results of previous studies of similar events.