

The CORONAS-Photon/TESIS experiment on EUV imaging spectroscopy of the Sun

S. Kuzin (1), I. Zhitnik (1), O. Bugaenko (2), S. Bogachev (1), S. Shestov (1), N. Suhodrev (1), A. Perzov (1), A. Mitrofanov (1), A. Ignat'ev (1), V. Slemzin (1).

1. P.N. Lebedev Physics Institute of RAS, Moscow, Russian Federation
2. Sternberg Astronomical Institute of Moscow University, Moscow, Russian Federation

The new experiment TESIS is developed for the Russian CORONAS-Photon mission (launch is planned for the end of 2007). The experiment is aimed at the study of activity of the Sun in the phases of minimum, rise and maximum of the 24th cycle of Solar activity by the method of XUV imaging spectroscopy. The method is based on the registration of full-Sun monochromatic images with high spatial and temporal resolution. The scientific tasks of the experiment are i) Investigation of dynamic processes in the corona (flares, CME etc.) with high spatial (up to 1'') and temporal (up to 1 second) resolution; ii) determination of the main plasma parameters like plasma electron and ion density and temperature, differential emission measure etc. iii) study of the processes of appearance and development of large scale long-life magnetic structures in the solar corona, study of the fluency of these structures on the global activity of the corona; iv) study of the mechanisms of energy accumulation and release in solar flares and mechanisms of transformation of this energy into the heating of the plasma and kinematics energy. To get the information for these studies the TESIS will register full-Sun images in narrow spectral intervals and the monochromatic lines of HeII, SiXI, FeXXI-FeXXIII, MgXII ions. The instrument includes 5 independent channels: 2 telescopes for 304 and 132 Å, wide-field (2.5 degrees) coronagraph, 280-330 Å and 8.42 Å spectroheliographs. The detailed description of the TESIS experiment and the instrument is presented.