

Seminarium Astrofizyczne

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Investigation and understanding of the solar active atmosphere

Observations and modelling of the solar atmosphere are important tools for understanding its structure and physical processes. Solar atmosphere is an interface between solar interior and the heliosphere, including Earth and its surrounding. Therefore, detailed analysis of the atmospheric composition, magnetic structure, energy transport, heating and dynamics is necessary for proper description of interactions of the processes occurred in the solar interior with those observed in the interplanetary space and related with the Sun. All these processes are significantly stronger during maximum of solar activity. Energetic solar active phenomena, in particular flares or coronal mass ejections (CMEs) significantly increase the radiation and fluxes of energetic particles, which contribute to the so called "Space Weather". Therefore, analysis of the solar active events which occur in the solar atmosphere is important and require special techniques of observations and simulations.

One of the method which seems to be most perspective is non-equilibrium plasma spectroscopy combined with NLTE modelling of flares and other active phenomena observed in the Sun. In our research we use high-quality observations of active events obtained from ground-based and orbital observatories, and advanced numerical codes which are used for interpretation and simulation of the observational data. With these methods we hope to understand solar flares, CMEs and other active phenomena as most violent eruptions potentially affecting our planet. Our research can be also extended for stellar flares commonly observed on active late-type stars where similar sudden eruptions can affect potential extra-solar planets orbiting around these stars.

Serdecznie zapraszam,

Agnieszka Majczyna