Highly energetic activity phenomena of main-sequence stars


(1) Karl-Franzens University, Institute of Physics/IGAM, Graz, Austria, (2) Institut d'Estudis Espaciais de Catalunya/CSIC, Bellaterra, Spain, (3) Ukrainian Academy of Sciences, Institute of Radio Astronomy, Kharkov, Ukraine, (4) Slovak Academy of Sciences, Astronomical Institute, Tatranská Lomnica, Slovakia, (5) Austrian Academy of Sciences, Space Research Institute, Graz, Austria

Stellar activity can have major consequences for the habitability of nearby terrestrial planets. In view of forthcoming habitable planet finding missions like Darwin (ESA) and TPF (NASA), a detailed knowledge of the activity characteristics of possible target stars is essential for the design of these missions. We investigate the CME- and Flaring- activity of nearby single main-sequence G, K, and M stars, taking into account the association of decameter radio type II bursts and CMEs on the Sun (1st approach) as well as the fluxratio of the CIII 1176Å multiplet and the CIII 977Å singlet as a diagnostic for electron density (2nd approach). Three observational campaigns are planned in the near future for implementation of the 1st approach. The radio observations will be carried out at the UTR-2 of the Radioastronomical Institute of the Ukrainian Academy of Sciences in Kharkov/Ukraine. Simultaneous observations in the optical range (UBVRI photometry, optical spectroscopy) are also planned and will be carried out at the Astronomical Institute of the Slovak Academy of Sciences in Tatranská Lomnica/Slovakia and the Observatory Lustbühel of the Institute of Physics/IGAM of the Karl-Franzens University in Graz/Austria, respectively. The 2nd approach is implemented using existing spectral timeseries of G, K, and M stars obtained by the FUSE satellite.