Contributed Talk

Splinter Activity

Effect of Metallicity on Stellar Brightness Variability

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Spaceborne measurements of the Sun have shown that its brightness varies on several time-scales, where variations on time-scales greater than a day are associated with the surface magnetic field. Independently, observations of Sun-like stars indicate a broader pattern of photometric variability for stars. Comparing stellar brightness variability of Sun-like stars with the same magnetic activity as the Sun showed that the solar variability on the magnetic activity cycle time-scale appeared to be anomalously low. One recently proposed explanation is based on the fact that solar brightness variability is caused by a delicate balance between dark and bright magnetic features. This balance is sensitive to the combination of stellar fundamental parameters, i.e. effective temperature, metallicity and surface gravity. So that stars with slightly different fundamental parameters can show significantly higher brightness variations. To check this hypothesis it is essential to study the effect of fundamental stellar parameters on stellar brightness variability. Using 1D models the effect of metallicity and effective temperature on stellar spectra and thus on brightness variations on the magnetic activity cycle time-scale is investigated. For that the contrast of bright and dark magnetic features is taking into account by exploiting the SATIRE model of solar brightness variability.