JUL.16-18 LC2019 Changchun, CIOMP

Activity of the Sun and Sun-like stars

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Solar brightness varies on all timescales that have ever been resolved or covered by spaceborn instruments. Driven by the climate community's interest in links between solar variability and climate change, our understanding of solar–brightness variations has dramatically improved over the last decade. Modern models are capable of reproducing available measurements of solar brightness variability with high precision. However, the amplitude of secular solar brightness variability still remains uncertain, hindering the quantitative assessment of the solar role in natural climate change.
Concurrently with solar studies, ground–based photometric measurements of Sun–like stars revealed brightness variations similar to solar variability on the 11–year activity timescale but with much wider variety of patterns. The interest to stellar brightness variations has been further elevated by the unprecedented precision of stellar brightness measurements achieved by the CoRoT and Kepler space missions.
We review a present state–of–the–art in the studies of solar and stellar brightness variability and show how the solar paradigm can help us to explain variability of other stars and vice a versa stellar data can help us to better understand solar activity.

SHORT BIO:

Dr. Alexander Shapiro, Leader of the SOLVe Research Group (http://www2.mps.mpg.de/projects/solve/) funded by an ERC Starting Grant, Max–Planck–Institut für Sonnensystemforschung, Göttingen, Germany. He has received Marie Curie Intra–European Fellowship, Fellowship from the "Dynasty" foundation in theoretical physics, and Soros fellowships. His research interesting is focused on: solar and stellar variability, numerical and analytical radiative transfer, solar and stellar magnetic fields, Sun–Earth connections, and atmospheric physics.

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