Project Details

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Topic: The Solar-Stellar Connection

Project Title: Observational Constraints and Tests for Dynamos in Solar-like Stars

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Summary:
Data from other stars can help solar dynamo models, putting more
on constraints on the models, and then testing them over a wide
range of properties. A surprising amount of information can be
gleaned with careful analysis of a variety of stellar data.

Starting with existing databases and published values, and
later using data generated by other FST and the growing VSSO
database, we propose to: 1) Generate cycle periods, amplitudes,
secondary periods, rotational periods, surface differential
rotation, diffusivity and meridional flow estimates, identify
activity belts, and see how all these vary with mass and age.

2) Explore mass and age dependence of stars which may be in
magnetic grand minima, and improve Ca II HK calibration,

3) Determine how the rates of large flares and CMEs vary with
mass and age, and 4) explore new dynamo cycle proxies.

These will be generated from existing data and datasets
initially and sent to the dynamo modeling teams and the VSSO;
later improvements and additional constraints will be derived
from new data coming into the VSSO and from other sources. These
results will lay a crucial foundation for improving our physical
understanding of the dynamos of solar-type stars and how they
evolve in time.
Publication References:

no references