

Contributed Talk

Splinter Activity

SEARCH FOR PHYSICAL MECHANISMS UNDERLYING SOLAR AND
STELLAR ACTIVITY VARIATIONS

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Following half a century of detailed monitoring of solar and stellar activity, we do not have predictive physical models for the wide variety of their manifestations. We review attempts to model magnetic activity variations in the Sun and other G- and K-type stars, in particular on how stellar dynamos could change with the rotation rate and on the surface distribution of magnetic regions. We show how effects of differential rotation and the emergence patterns of starspots can substantially drive the modulation of radiative flux in rotational and cycle time scales. We discuss possible mechanisms responsible for the nonlinear saturation of solar and stellar activity cycles. Finally, we give an account of the unsolved problems in the field, followed by an outlook on further modelling attempts.