Workshop

Imaging of Stellar Surfaces

ESO Garching, March 5-9, 2018

Emre Isik
Max-Planck-Institut für Sonnensystemforschung, Goettingen, Germany

Title:
Modelling the surface distribution of magnetic activity on Sun-like stars

Abstract:
With the advent of high-precision space-borne stellar photometry and prospects for direct imaging, it is timely and essential to improve our understanding of stellar magnetic activity in rotational time scales. We present models for 'younger suns' with rotation and flux emergence rates between 1 and 16 times the solar rate. The models provide latitudinal distributions and tilt angles of bipolar magnetic regions, using flux tube rise simulations. Using these emergence patterns, we model the subsequent surface flux transport, to predict surface distributions of star-spots. Based on these models, we present preliminary results from our further modelling of the observed azimuthal magnetic fields, which strengthen for more rapidly rotating Sun-like stars.