Workshop

Imaging of Stellar Surfaces

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Bernd Freytag
Uppsala University, Uppsala, Sweden

Title:
Surface layers of AGB stars modelled with CO5BOLD

Abstract:
Being able to observe the structure and dynamics of the solar atmosphere with high spatial, temporal, and frequency resolution has helped to develop detailed numerical models. These models were successfully applied to solar-type stars and observations and theory together have lead to a good understanding of many aspects of the atmospheres of the Sun and solar-type stars. I will present the extension of those simulations to AGB stars and demonstrate with CO5BOLD models how the interplay of large and small convection cells, waves, pulsations, and shocks, but also molecular opacities can give the "surface" of AGB stars an appearance very different from the granular pattern of the solar sufrom that of the Sun, the more dynamical processes change and therface. However, the more stellar properties and physical conditions differ from that of the Sun, the more dynamical processes change and the model assumptions (e.g., about numerical resolution, boundary conditions, or treatment of radiative transfer) have to be scrutinized. Due to the complexity of the dynamical processes, this can only be done with detailed time-resolved imaging becoming possible for a number of nearby red giant and supergiant stars.