

# The science case of the PEPSI high-resolution echelle spectrograph and polarimeter for the LBT

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Received; accepted; published online

**Abstract.** T e x t.

**Key words:** follow A&A style

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## 1. Introduction

### 1.1. Stellar magnetic fields: a paradigm

#### 1.1.1. Rotational velocities of very low-mass stars and brown dwarfs

The advent of large and high quantum-efficiency CCD detectors, combined with high-resolution spectrographs and abundant computing power, has ushered stellar astronomy into an era when we can produce images of the surfaces of other stars (called Doppler imaging or Doppler tomography, see Fig. ?? and Fig. 2). From these images we can study both the spatial pattern of surface phenomena and their temporal behavior. There are several well-proven techniques to map the surface temperature distribution of cool stars from integral light (see Piskunov & Rice 1993) but the next goal is to apply these techniques to the circularly *and* linearly polarized light components (e.g. Piskunov & Kochukhov 2002).

*Acknowledgements.* KGS acknowledges support from ...

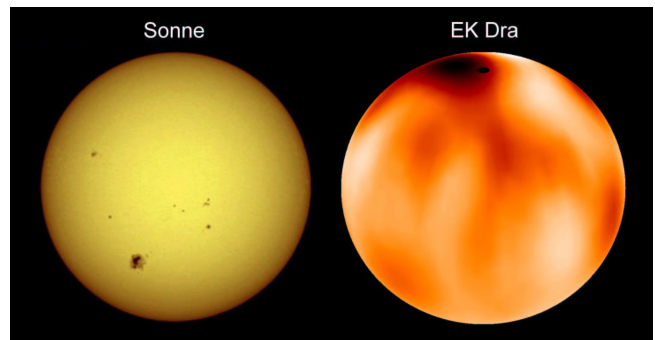
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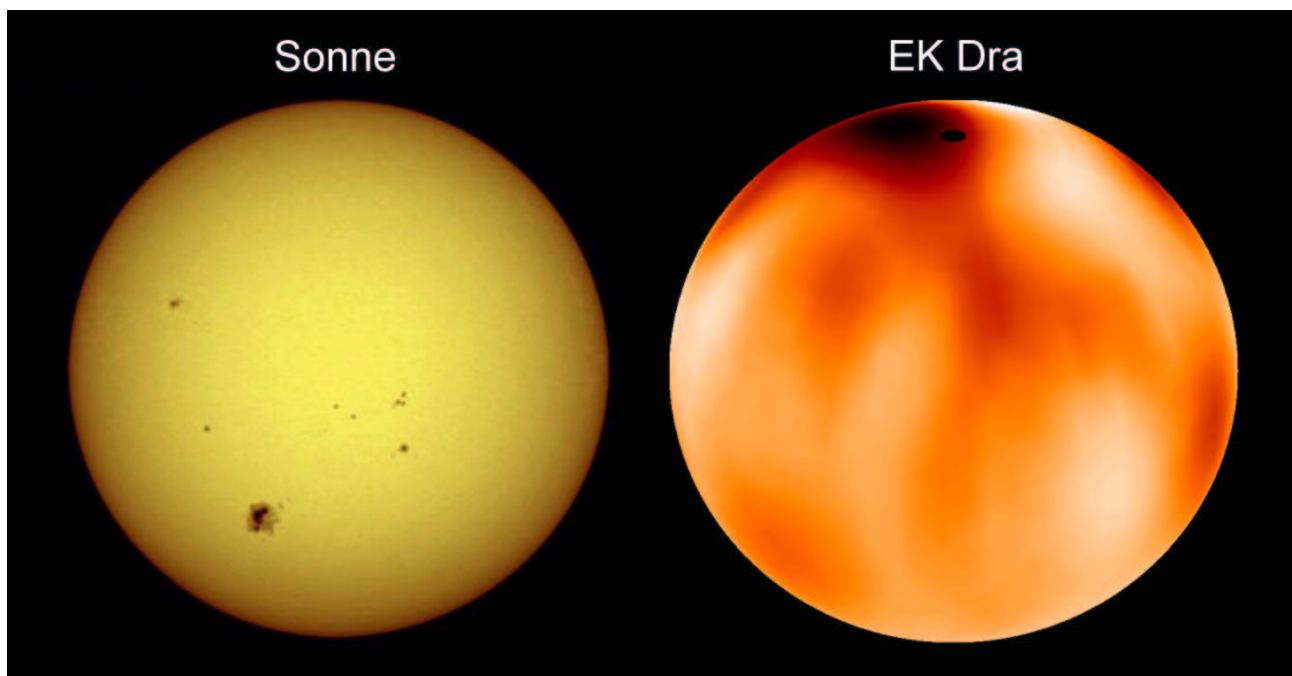
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**Fig. 1.** A comparison of a Doppler image of the G2V-star EK Dra and a photospheric white-light image of the Sun.

## References

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**Fig. 2.** A comparison of a Doppler image of the G2V-star EK Dra and a photospheric white-light image of the Sun.