

Contributed Talk

Splinter Activity

CONNECTING CHROMOSPHERIC EMISSION TO PHOTOSPHERIC  
MAGNETIC FIELD

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Solar full-disc photographs in Ca II K line have been taken since 1892 at various observatories around the globe. Such images are considered as good tracers of the photospheric magnetic field due to the good spatial correspondence between the brightness excess in Ca II K images and strong magnetic fields found in magnetograms. Numerous studies found a power law relationship between the Ca II K brightness and the photospheric line-of-sight magnetic field strength. Still, there is no general agreement between the parameters derived in these studies, and even the existence of such a relationship has been debated. However, all previous studies were limited to rather few images, low quality observations, or isolated regions on the solar disc.

We reassess the relation between the photospheric line-of-sight magnetic field strength and the Ca II K excess brightness using high-quality full-disc and almost co-temporal SDO/HMI magnetograms and Rome/PSPT Ca II K observations covering half a solar cycle. We also test the derived relationship by employing it for a reconstruction of unsigned magnetograms from the Ca II K observations.