Contributed Talk

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Fast dual-beam spectropolarimetry - first results on scattering polarization measurements with FSP II at the DST

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Calculations, based on 3D MHD solar atmosphere simulations, of the photospheric Sr I 4607 Å spectral line, known for its strong scattering polarization signals of up to 1%, predict a unique spatial distribution of linear polarization, induced by scattering of the locally fluctuating radiation field, even when observed at disc center. Thus far, however, insufficient polarimetric sensitivity, spatial resolution and/or low cadence have prevented this pattern in the linear polarization from being detected in observations. We present preliminary results of observations with the Fast Solar Polarimeter (FSP) in the Sr I 4607 Å line at disc center, carried out with the Dunn Solar Telescope (DST) at Sacramento Peak, New Mexico. With a high-cadence, dual-beam spectropolarimeter (FSP II) attached to a modified commercial CMOS camera, noise levels as low as $5 \cdot 10^{-4}$ per pixel are achieved after 2 minutes of temporal binning.