

Polarization detection technique in stellar spectropolarimetry  
using PCA analysis

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In this work we present some advances in a new polarization detection method applied to stellar spectropolarimetric observations. Our method requires a database of synthetic stellar spectra in order to decompose it using the PCA procedure. Once we have obtained the new eigenvectors from the decomposition, we employ them to recover a signature in the Stokes profiles, putting in evidence of the presence (or absence) of a magnetic field in the stellar atmosphere. This recently developed technique has the advantage that it can also be applied to the detection of the linear states of polarization (Stokes  $Q$  and  $U$ ). We present some of the first results applied to real observations.

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