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An Investigation of the Photospheric and Chromospheric Layers of Sunspots

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The spectropolarimetry is one of the most powerful techniques for deducing the magnetic structure of the Sun. A detailed measurement of the polarization signal of spectral lines (Stokes vector) allows us to infer the physical conditions in the solar atmosphere prevailing during the line formation. Inversion codes are the main tools to extract this information from the Stokes spectra. Our study focuses on measurements of the chromospheric He I 1083.0 nm triplet and the photospheric Si I 1082.7 nm line. A spectropolarimetric data set of sunspots, obtained with the German Vacuum Tower Telescope (VTT) at the Teide observatory in Tenerife, is analyzed using the inversion code HeLix. We will expound the inversion code HeLix, and present the result of our analysis.