

# Fibre-optic spectropolarimeter for the 6 m telescope

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The spectropolarimeter is intended for measurements of the linear and circular polarization inside spectral lines. It consists of three parts: the first one is in the prime focus of the 6 m telescope, the second — at the Nasmyth platform near the slit, and the third — on the cameras of the Main Stellar Spectrograph. The beam of light from a star (see Fig.1) goes through the diaphragm 3 and is partially reflected to the TV-guiding system 1.

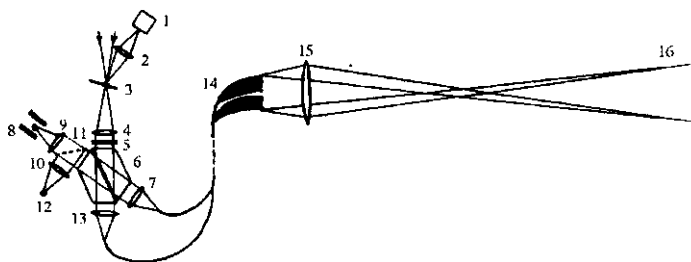


Figure 1: Schematic of the spectropolarimeter. 1 — TV-guiding system, 2,4,7,9,10,13,15 - lenses, 3 — diaphragm, 5 — retarder, 6 — polarizer, 8 — neon lamp in permanent magnet, 11 — mirror, 12 — incandescent lamp, 14 — 30 m fiber cables, 16 — slit of the Main Stellar Spectrograph.

After collimation by the lens 4 the beam goes through a switchable liquid-crystal retarder 5 ( $0^\circ$ , a quarter or a half) and is divided by a liquid-crystal (LC) polarizer 6 into two linearly polarized beams and by two lenses 7, 13 are projected on the inputs of the multifiber cables (each consisting of 7 hexagonally packed fibers). Another side of the LC-polarizer is used to input light from an incandescent lamp 12 for flat-fielding procedure and from a neon lamp 8 in the magnetic field of the permanent magnet 2.5 kG for testing the spectropolarimeter. Light is transmitted by two-fiber cables 14 (30 m) to the Nasmyth platform (two output 7 linear arrays) and projected by lens 15 onto the slit of the Main Stellar Spectrograph 16. Two Zeeman spectra are recorded by the CCD-detector on the cameras 1 or 2 of the Main Stellar Spectrograph.

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