

WIDE-FIELD STELLAR PHOTOMETRY WITH THE 50/70 SCHMIDT TELESCOPE OF THE NAO ROZHEN

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The telescope and its equipment

The 50/70 cm Schmidt-telescope

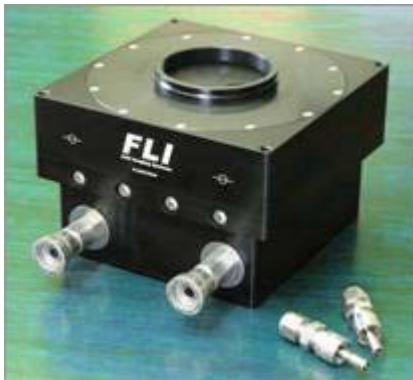
Optical parameters:

Diameter of the corrector plate: 50 cm

Diameter of the spherical mirror: 70 cm

Focal length: 172 cm

Focal ratio: F/3.44



Credits: Pencho Markishki

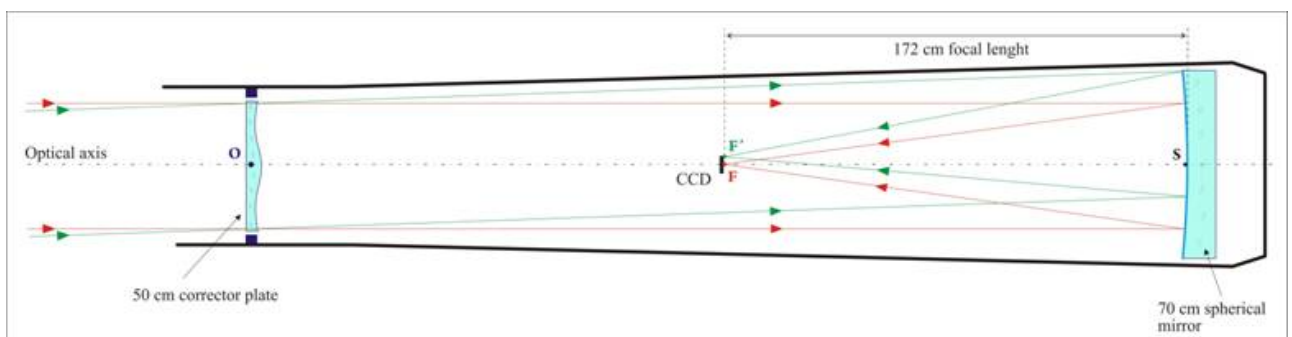
CCD-camera FLI PL 16803

4096x4096 active pixels, 9x9 mm pixel size



Credits: Pencho Markishki

Optical design of the 50/70 cm Schmidt-telescope



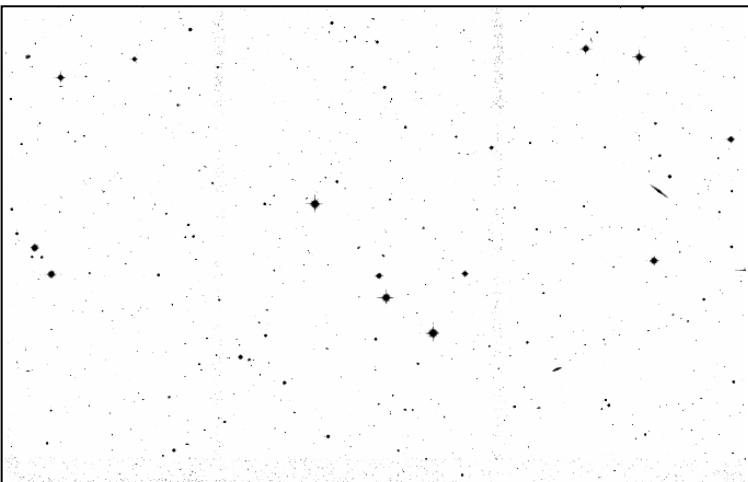
Credits: Pencho Markishki

Observational data

We used observations of Stetson standard photometric field L104 obtained with 50/70-cm Schmidt telescope of NAO Rozhen during 2 different nights from 17th to 19th of March 2012 in order to study the FWHM, the ellipticity and the orientation of the stellar image as a function of its position over the detector.

Observational log

#	Name	Date	Hour	Altitude	FWHM
	L104_V-001_300_I.fit	'2012-03-17	20:58:14 UT	37	2.0 - 2.8
	L104_V-001_300_II.fit	'2012-03-17	23:22:58 UT	48	1.8 - 2.5
	L104_V-001_300_III.fit	'2012-03-18	01:41:51 UT	37	2.0 - 2.8
	L104_V-001_30_I.fit	'2012-03-17	20:48:06 UT	36	1.8 - 2.5
	L104_V-001_30_II.fit	'2012-03-17	23:21:35 UT	48	1.8 - 2.5
	L104_V-001_30_III.fit	'2012-03-18	01:48:03 UT	36	2.0 - 3.0
	L104-001_V_300_I.fit	'2012-03-18	20:14:07 UT	30	2.7 - 3.5
	L104-001_V_300_II.fit	'2012-03-18	23:36:53 UT	47	2.0 - 3.0
	L104-001_V_300_III.fit	'2012-03-19	02:18:32 UT	30	2.5 - 3.0
	L104-001_V_30_I.fit	'2012-03-18	20:03:42 UT	29	2.5 - 3.5
	L104-001_V_30_II.fit	'2012-03-18	23:21:50 UT	48	1.8 - 2.6
	L104-001_V_30_III.fit	'2012-03-19	02:25:02 UT	30	2.0 - 3.2



Stetson standard field L104
(fragment)

RA(J2000):12^h 42^m 19.4^s

DEC: -00° 34' 36"

88.7 x 58.0 arcmin²

Results

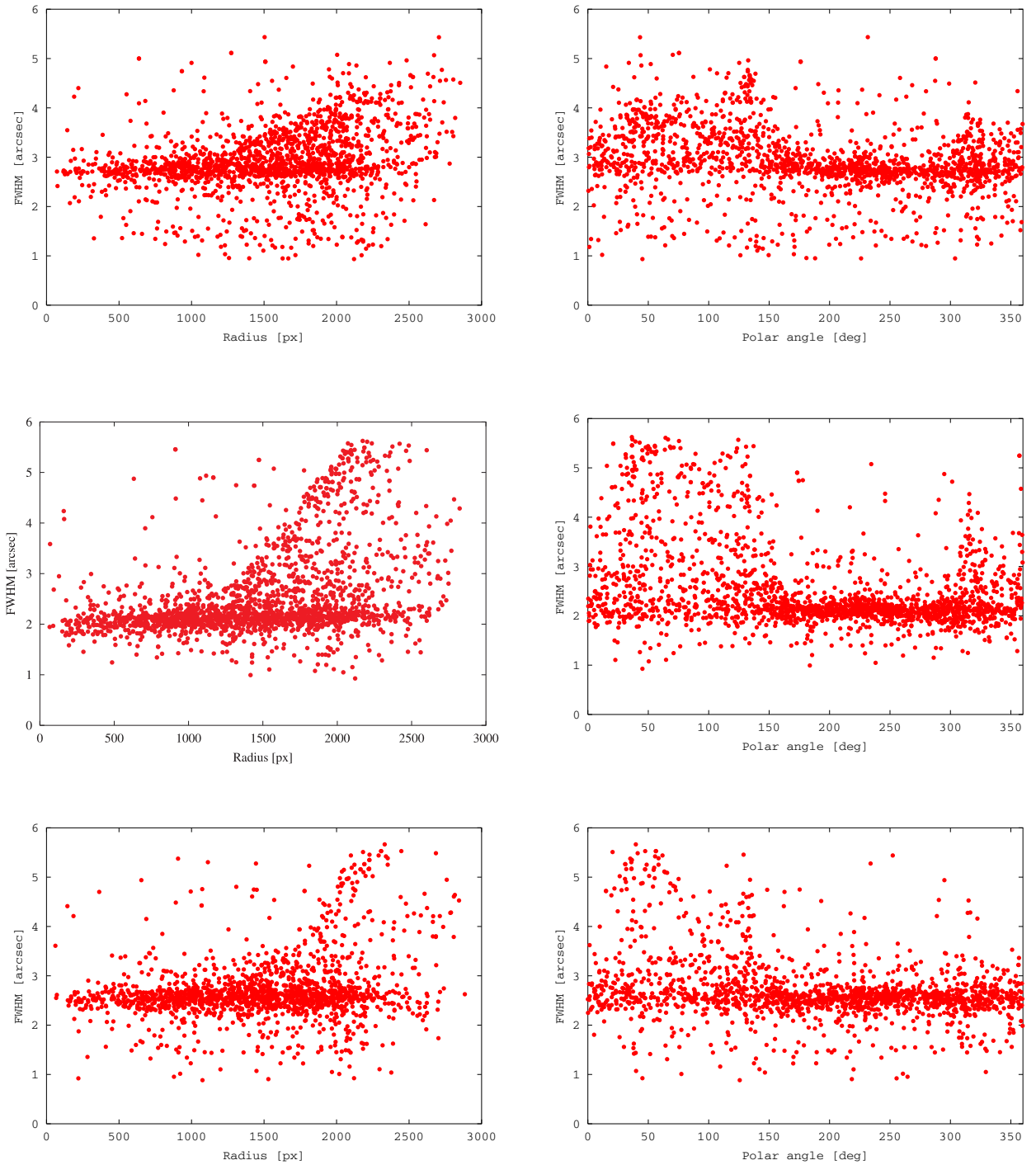


Fig. 1. Variations of the FWHM as a function of the radial distance (left panel), the polar angle (right panel) relative to the center of the image and the altitude above the horizon (30° before culmination 47° at and 30° before, at, and after culmination). Note, the smallest FWHM at culmination. Observations were carried on during the night 18/19 of March, 2012. Stars within polar angle range (0° – 150°) and at distances (1700 – 2200 px) are the most severely disturbed ones.

More results

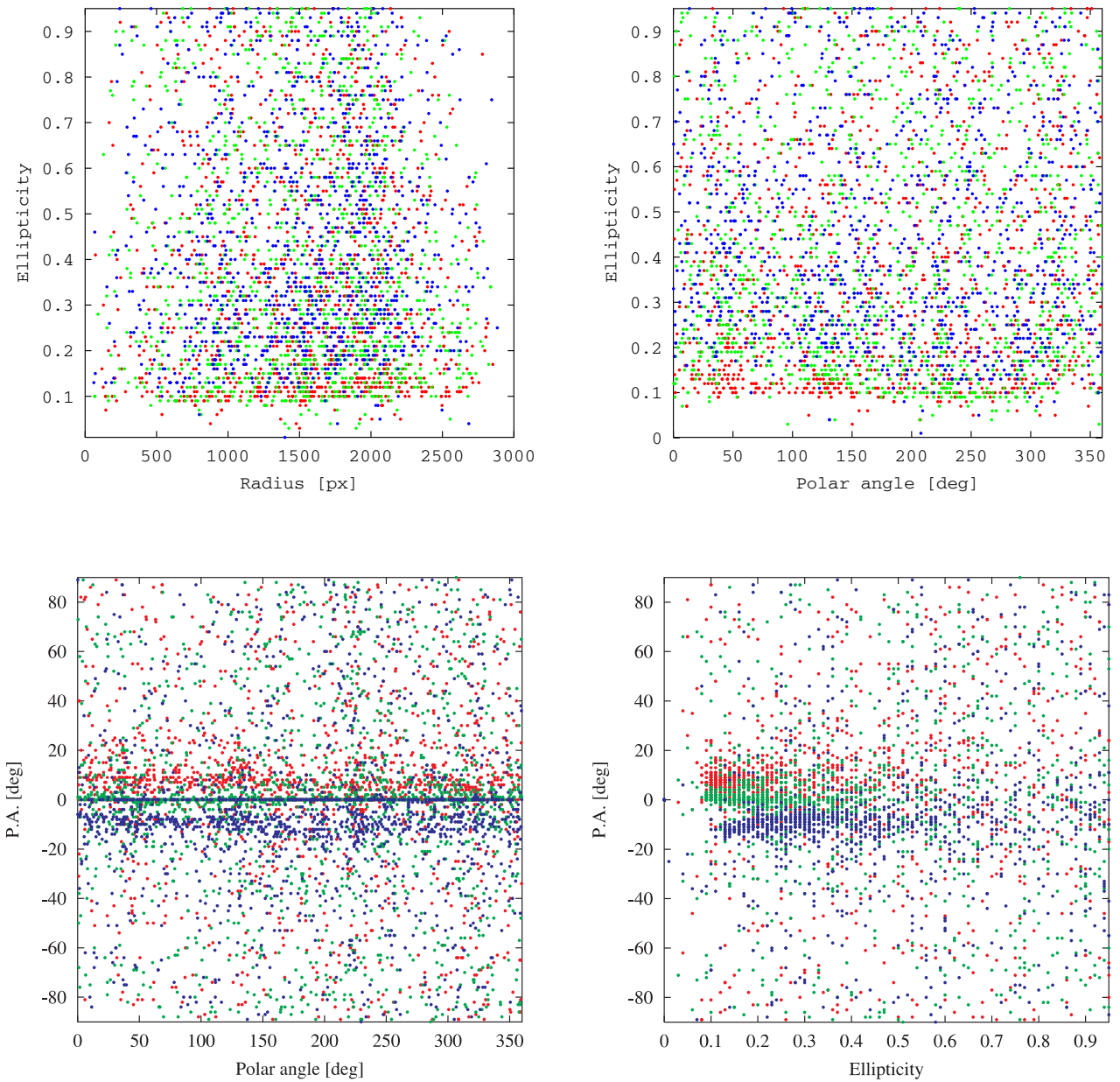


Fig. 2. Variations of the ellipticity and PA of the image as a function of the radial distance (upper left panel), the polar angle (upper right and lower left panel) and relationship between ellipticity and PA (lower right panel). Parameters corresponding to the different altitudes above the horizon are shown in color as follows: red – 30° before culmination, green – 47° at culmination, and blue - 30° after culmination). Note, the independence of ellipticity on star location and symmetrical variation of PA with the altitude.