

Torun Centre for Astronomy

Observing possibilities

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TCfA

November 16, 2010



TCfA, Nicolaus Copernicus University



Henry Draper's telescope



Henry Draper's telescope

LOADS FOR THE 8 INCH DRAPER TELESCOPE.

FOR CHARTING.

<i>HA Dist</i>	<i>0^h</i>	<i>1^h</i>	<i>2^h</i>	<i>3^h</i>	<i>4^h</i>	<i>5^h</i>	<i>6^h</i>	<i>7^h</i>	<i>8^h</i>	<i>9^h</i>	<i>10^h</i>	<i>11^h</i>	<i>12^h</i>	<i>D</i>	<i>I</i>
+ 80	105	105	103	99	96	93	92	92	95	100	105	110	111	173	116
+ 70	104	103	101	99	96	93	91	91	93	99	107	115	118	88	58
+ 60	103	102	101	98	95	92	89	88	89	95	108	125	133	60	40
+ 50	101	101	99	97	95	91	87	81	74	68				47	32
+ 40	100	99	98	96	93	89	81	63						39	26
+ 30	99	98	97	95	91	85	68							35	24
+ 20	97	97	95	93	89	77	30							32	22
+ 10	95	95	94	91	84	60								30	20
0	93	93	91	87	73									30	20
- 10	91	90	87	79	45									30	20
- 20	86	85	79	57										32	22
- 30	77	73	55											35	24

For prism plates, add to Charting Loads the quantities found in columns D and I, for their respective classes.

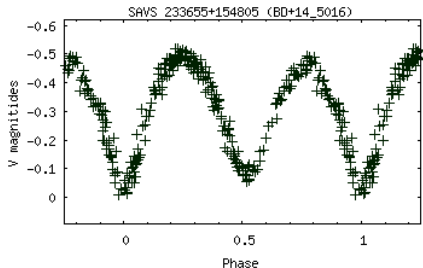
December 24, 1903.



Meade LX 200 telescope



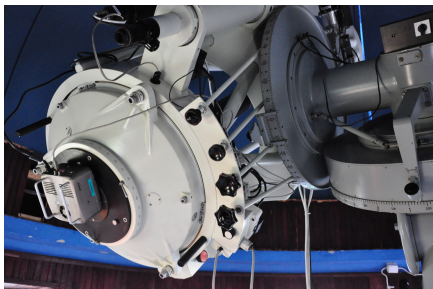
- achromatic telephoto MC APO Telezenitar-M 135/2.8
- camera SBIG ST-8XE
 - ✓ Kodak KAF-1603ME
 - ✓ 1530 x 1020 pixels
 - ✓ 13.8 x 9.2 mm
 - ✓ 9 x 9 μm
 - ✓ field of view $4^\circ \times 6^\circ$
 - ✓ *BVR* filters



sun.astr.uni.torun.pl/~gm/SAVS/



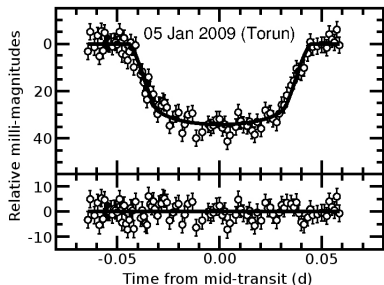
60 cm Cassagrain telescope



camera SBIG-STL-1001E

- Kodak KAF-1001E
- 1024 x 1024 pixels
- 24.5 x 24.5 mm
- 24 x 24 μm
- field of view 11' x 11'
- $UBVR_C I_C$ filters

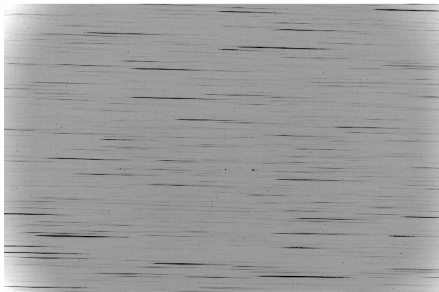
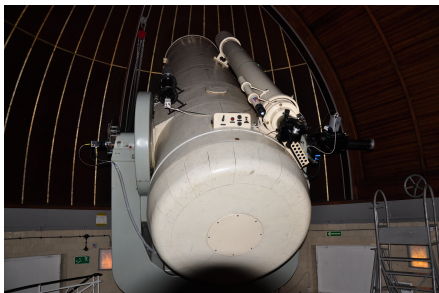
www.astr.uni.torun.pl/kaa/fotometr/
www.astr.uni.torun.pl/~swierczynski/



(Maciejewski et al., MNRAS, in press)



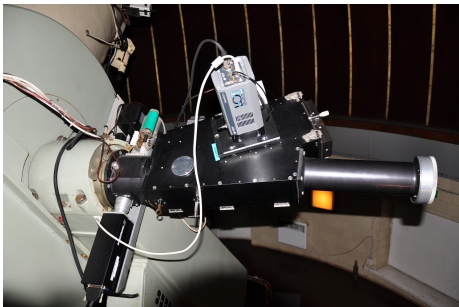
60/90 cm Schmidt-Cassagrain telescope



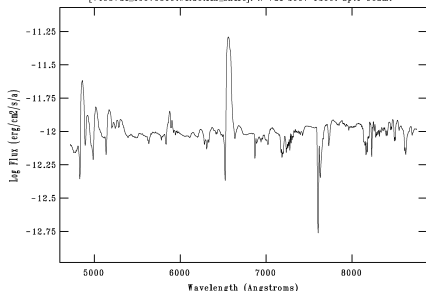
- prisms – F2 (3° , $\sim 250 \text{ \AA mm}^{-1}$) and BK7 (5° , $\sim 500 \text{ \AA mm}^{-1}$)
- camera SBIG STL-11000M
 - ✓ Kodak KAI-11000M
 - ✓ 4008 x 2672 pixels
 - ✓ 36 x 24.7 mm
 - ✓ 9 x 9 μm
 - ✓ field of view 1' x 0.5'
 - ✓ *UBV* filters



60/90 cm SCT - Canadian Copernicus Spectrograph



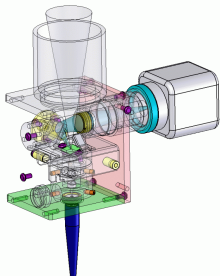
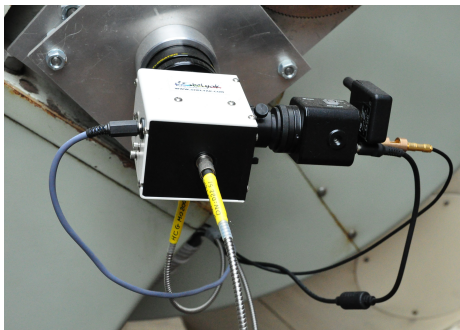
NDAO/IRAF V2.14.1 toma@tangra Thu 20:28:49 11-Nov-2010
[v458Vul_20070819.wl.dc.flx_shift]: N Vul 2007 1200. ap:1 beam:



- CCS (Richardson & Brealey 1973)
 - ✓ 27 different configurations
 - ✓ gratings 300, 600, 1200 lmm⁻¹
 - ✓ 2 image slicers
 - ✓ 2 slits 2'' and 4''
 - ✓ dispersion from ~0.2 to ~2.0 Å pix⁻¹
 - ✓ coverage from ~3500 to ~12000 Å
- camera Andor DU940P-BU
 - ✓ Andor Newton EMCCD
 - ✓ 2048 x 512 pixels
 - ✓ 27.6 x 6.9 mm
 - ✓ 13.5 x 13.5 μm



60/90 cm SCT - eShel spectrograph



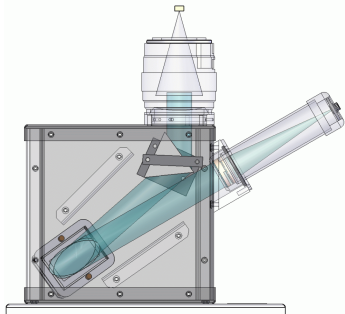
- 2'' or Schmidt-Cassegrain Telescope interface
 - mirror based with light going through a hole ($75\ \mu\text{m}$) in the middle
 - calibration input (remote controlled)
 - FC fibre connectors
 - scientific fibre $50\ \mu\text{m}$
 - calibration fibre $200\ \mu\text{m}$
 - guiding camera
- In our case additionally
- $0.33\times$ focal reducer ($f/4.95$)



60/90 cm SCT - eShel spectrograph

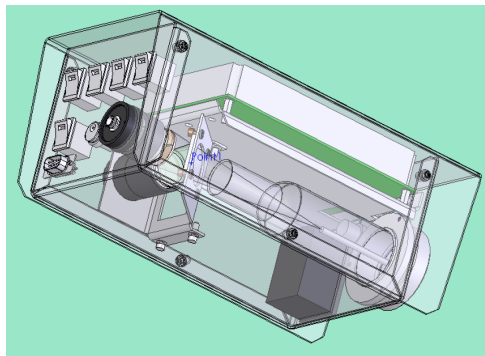


- fibre-fed
- cross-dispersed echelle
- $f = 125$ mm collimator ($f/5$)
- $R2$ high efficiency echelle grating
- coated prism cross-disperser
- resolving power $R \sim 10\,000$
- visible domain (around $4500 - 7000 \text{ \AA}$)
- choice of imaging camera



60/90 cm SCT - eShel spectrograph

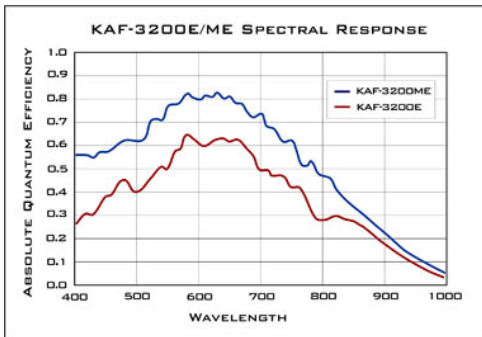
- ThAr lamp with high voltage power supply for precise calibration
- flat lamp for echelle order geometry and blaze processing



60/90 cm SCT - eShel spectrograph

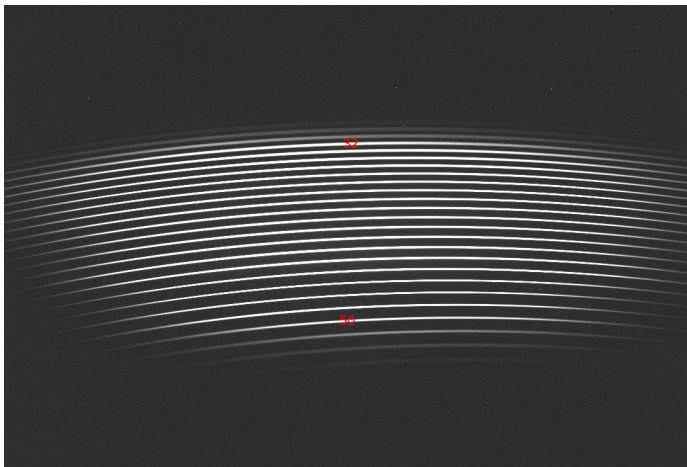
QSI (Quantum Scientific Imaging) 532s+

- Canon $f = 85$ mm lens adapter
- Kodak KAF-3200ME



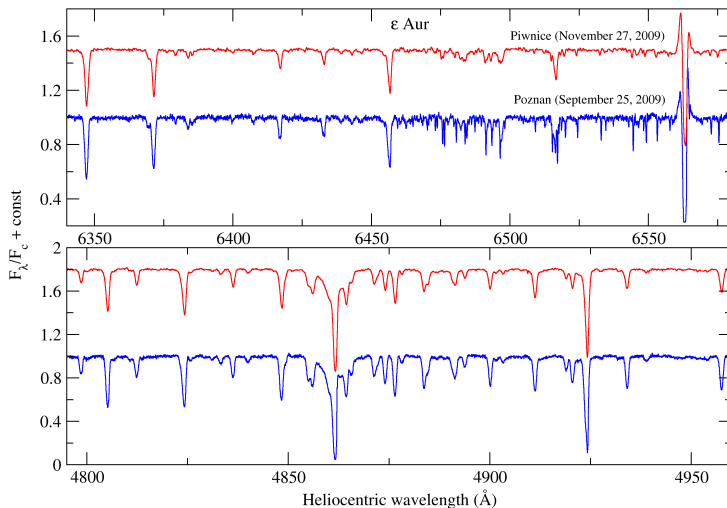
60/90 cm SCT - eShel spectrograph

- the spectral region can be slightly changed playing with the camera focus
- with the present set-up the best usable orders are from 32 to 50
- i.e. from $\sim 4300 \text{ \AA}$ to $\sim 7200 \text{ \AA}$



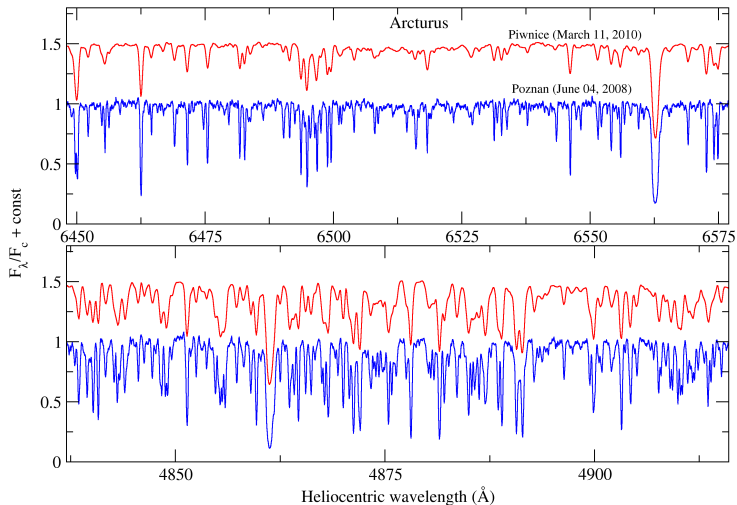
60/90 cm SCT - eShel spectrograph

- Comparison with the Poznan echelle spectrograph (a replica of MUSICOS with a resolving power $R \sim 35\,000$)

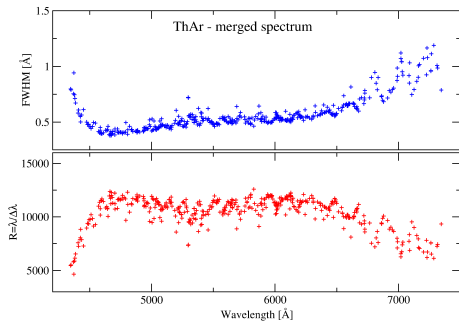
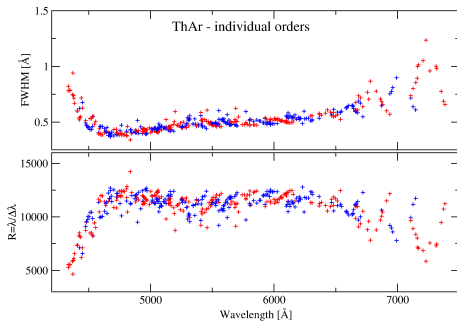


60/90 cm SCT - eShel spectrograph

- Comparison with the Poznan echelle spectrograph (a replica of MUSICOS with a resolving power $R \sim 35\,000$)



60/90 cm SCT - eShel spectrograph



- spectral region to be used for measurements 4700 – 6550 Å



60/90 cm SCT - eShel spectrograph

RV of Arcturus measured by the use of the IRAF task *rvidlines*

Date	RV km s^{-1}	Mean err km s^{-1}	N of lines
11.03.2010	-6.35	0.15	129
24.03.2010	-5.95	0.14	122
17.04.2010	-6.74	0.15	127
Mean	-6.35	0.15	

RV of Arcturus measured with cross-correlation technique

Date	RV km s^{-1}	Mean err km s^{-1}
11.03.2010	-6.24	0.27
24.03.2010	-5.77	0.32
17.04.2010	-6.30	0.27
Mean	-6.10	0.29

The standard RV of Arcturus is $-5.3 \pm 0.3 \text{ km s}^{-1}$

