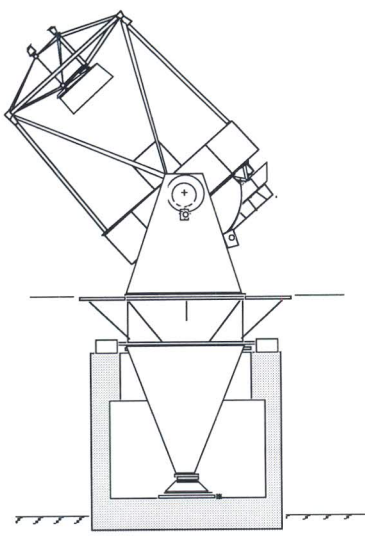
WISCONSIN
INDIANA
YALE
NOAO



3.5 METER TELESCOPE

Status Report on the WIYN Reimager and Spectropolarimeter

Art Code
28 Feb 1996

WODC 02-43-01

Status Report on the WIYN Reimager and Spectropolarimeter.

Feb. 28, 1996

The Cassegrain reimager optics were successfully installed on the WIYN Telescope during the first week of January. The Wisconsin spectropolarimeter, HPOL, was installed on the reimager during the February engineering time successfully. The performance and total thru-put of the system was all that we had hoped for and excellent polarimetric data were obtained during this check out period. HPOL will be used during the Wisconsin queue time in March and in the Wisconsin April run. After which some additional refinements will be undertaken.

The reimager is mounted behind the WIYN primary mirror and extends up into the central hole. When the Tertiary mirror is flipped up the reimager provides a symmetric on-axis F/13.8 image plane. The unvignetted field of view is 3 minutes of arc in radius and currently the image size is the order of 0.2 seconds of arc. The scale at this focus is 4.25 sec per millimeter. The spacing between the reimager mounting surface and the telescope fork is approximately one meter. Focal plane instruments are mounted to the image rotator. Signals for guiding and image rotation, however, are derived from the focal plane instrument. The HPOL hardware and software was developed using the WIYN simulator which with only minor problems was then easily integrated with the WIYN control system.

The additional refinements referred to above include some work on both the reimager and HPOL. The reimager is a two mirror optical system, similar to a Ritchey-Chretien, designed to operate in the F/6.3 converging bundle of the WIYN Telescope. The primary mirror apparently exhibits some coma from the outer two inches of this 14 inch mirror. It is this aberration that currently limits the system to about 0.2 arc sec images. It is the expectation of the optician that this can be corrected following the April run with HPOL. We should then expect to get as good imaging as experienced at the WIYN port. The reimager provides for the use of an ADC and the motors to drive the rotator have been tested. We do not as yet have the ADC optics but it will become a requirement if the improved imagery were to be utilized.

HPOL will be returned to Madison for some additional hardware and software enhancements during this same period. and documentation will have to be developed both to permit maintenance while at KPNO and to provide Interface documentation for any one desiring to use this focal position for instruments other than HPOL.

Until the final completion of the reimager optics and structure it is not possible to give the as built specifications. Approximate specifications are listed below along with two optical path drawings for the F/13.8 Reimager.

Reimager specs. as of 2/28/96

Primary (Concave Hyperboloid)

Diameter	35.9 cm
Edge Thickness	5.72 cm
Central hole diam.	12.0 cm
Radius of Curv.	200.0 cm
Conic Parm ($1-e^2$)	-2.79155

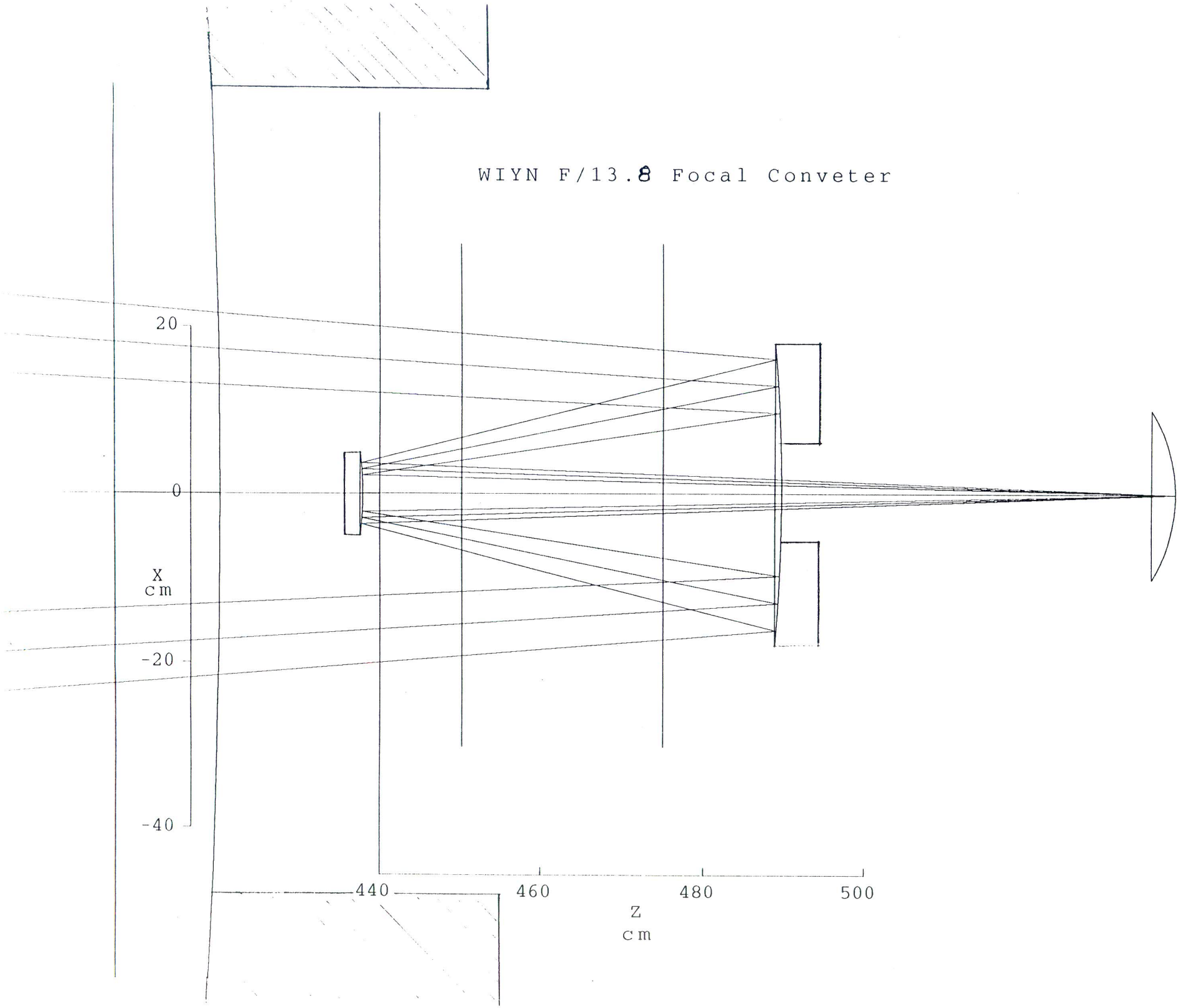
Secondary (Concave Hyperboloid)

Diameter	10.0 cm
Edge Thickness	1.55 cm
Radius of Curv.	35.175cm
Conic Parm ($1-e^2$)	-.44617

The mirror spacing is -51.744 cm and the final focus is located 117.89 cm behind the vertex of the WIYN 3.5 meter primary or 48.54 cm behind the vertex of the reimager primary.

Currently the bundle is about F/13.8 the equivalent focal length 4854.57 cm and the plate scale is 4.25"/mm.

A.D. Code
Feb 28, 1996


WIYN F/13.8 Focal Conveter
20
0
-20
-40
X
cm
440
460
480
500
Z
cm

WIYN Telescope with Focal Converter