

# CHINESE ASTRONOMICAL PLATE ARCHIVE AND PRELIMINARY RESULTS OF NEW DIGITIZING MACHINE

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# Chinese Astronomical Plates

- Observation started since 1902
- Objects: asteroids, comets, binaries, variable stars, flare stars, new star, supernova, radio stars, clusters, galaxies and so on.

Q10

照片號碼 10

4.5

照片中心  $\alpha$  11 h 36 m s

的赤經緯 8 +0° 26, "

拍照時間 1902 年 5 月 2 日 時 分 秒

露光長短 12 18<sup>m</sup> 15<sup>m</sup> 5<sup>s</sup> **Exposure time: 1h, 18m, 15m, 5m**

拍照對象

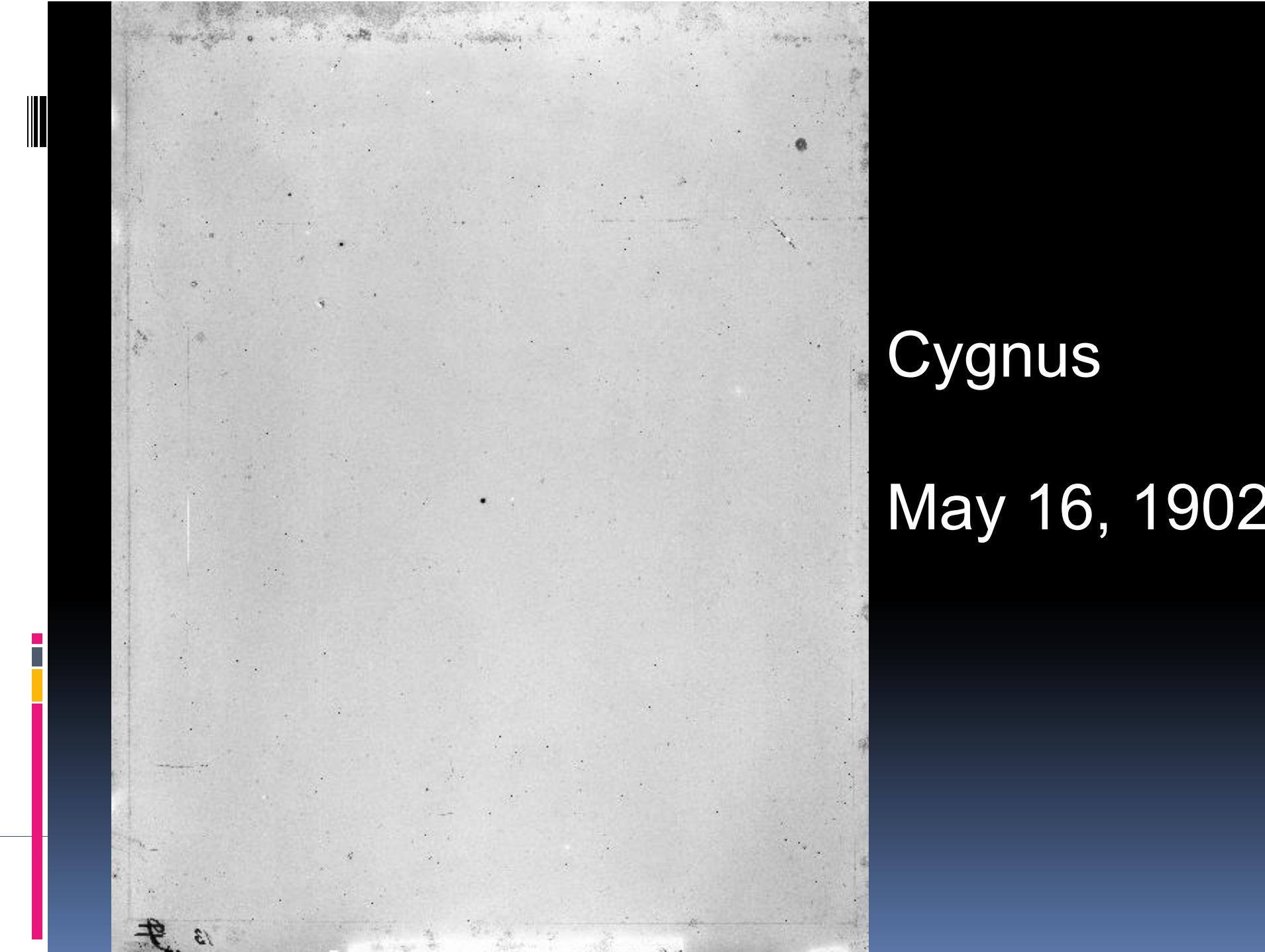
拍照者

備註

玻璃圓盤(右上中間块) 20.6.101223

是像高好，底片有黑斑端事++

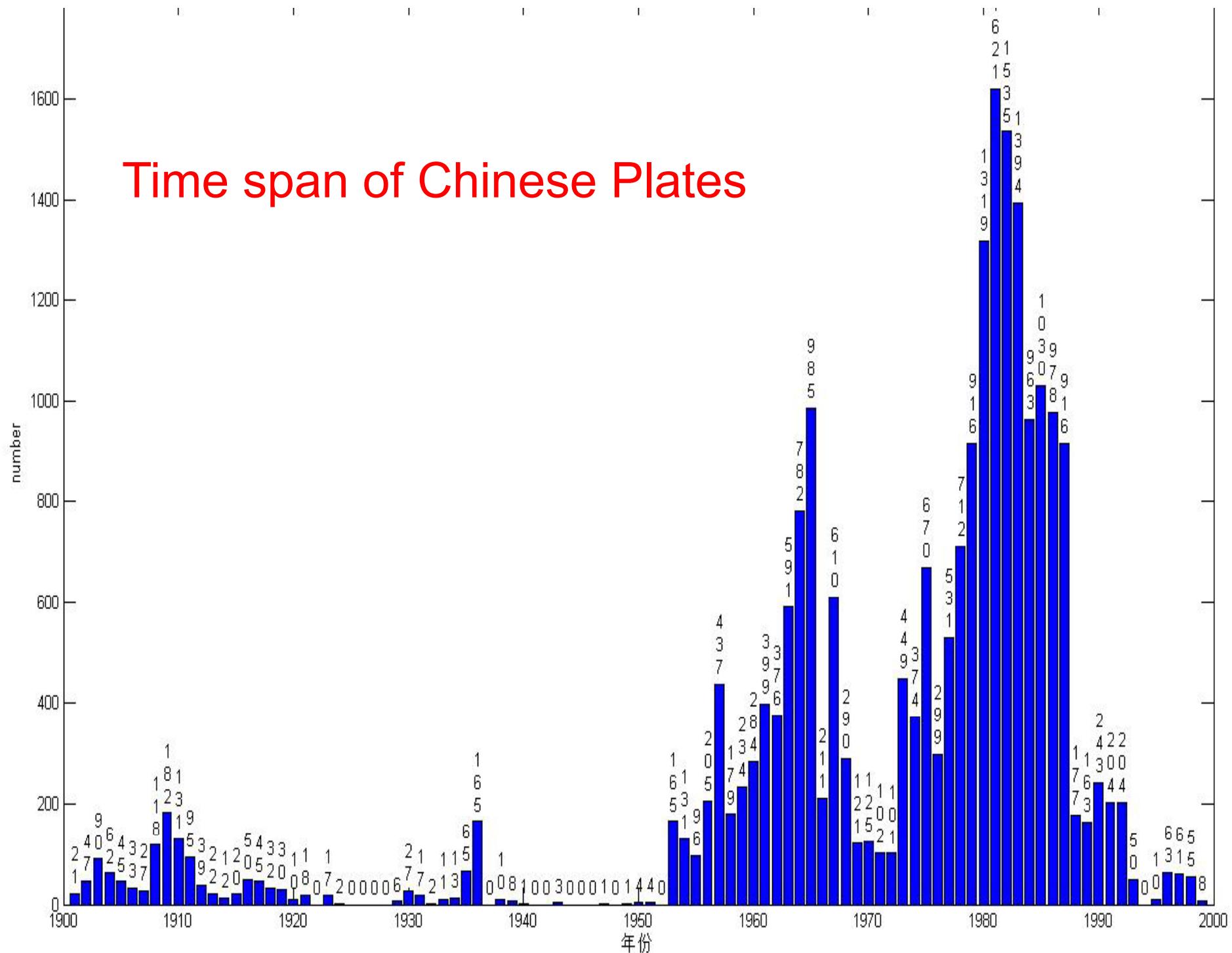
Envelop of the old plate on May 2, 1902

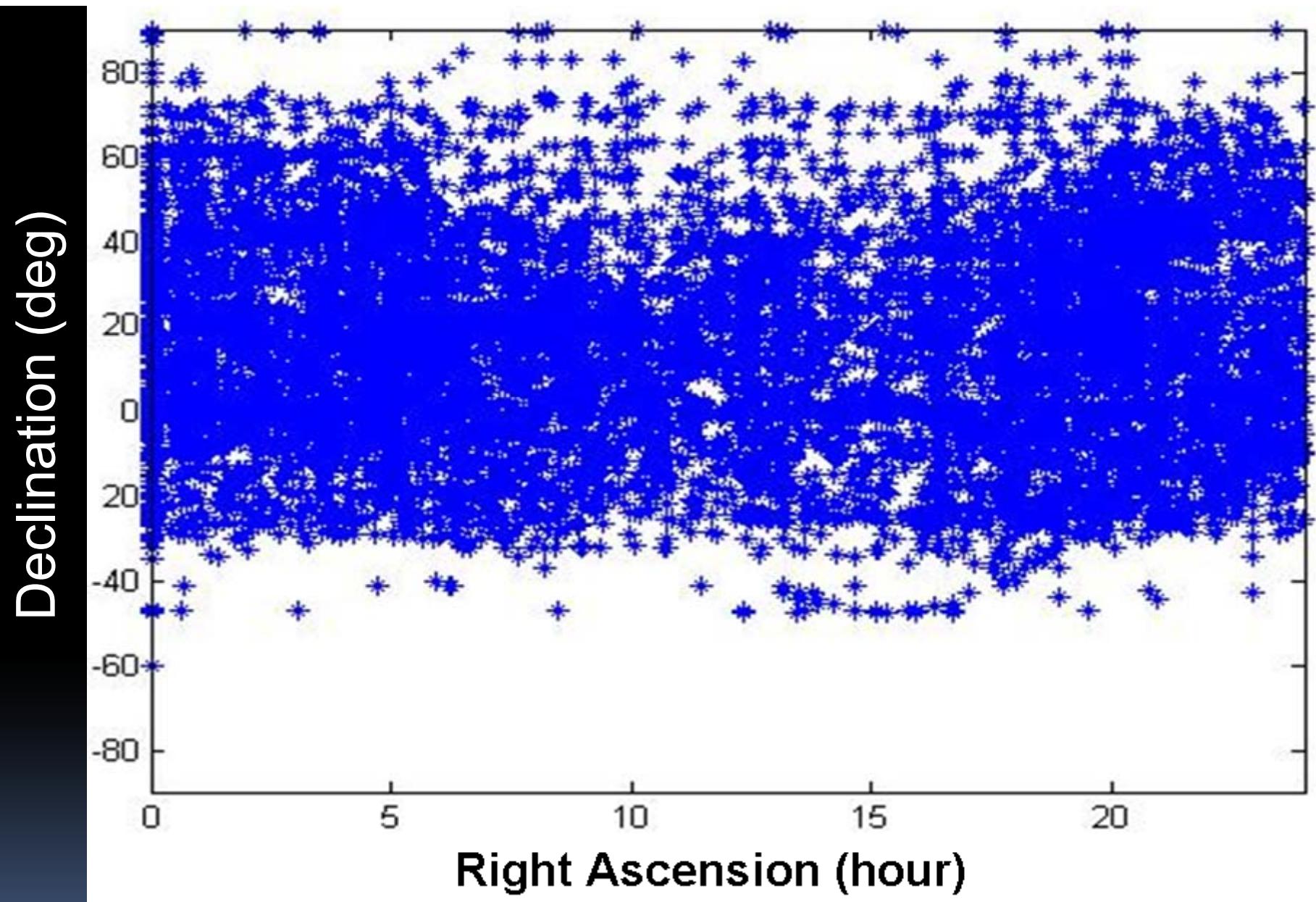


Cygnus

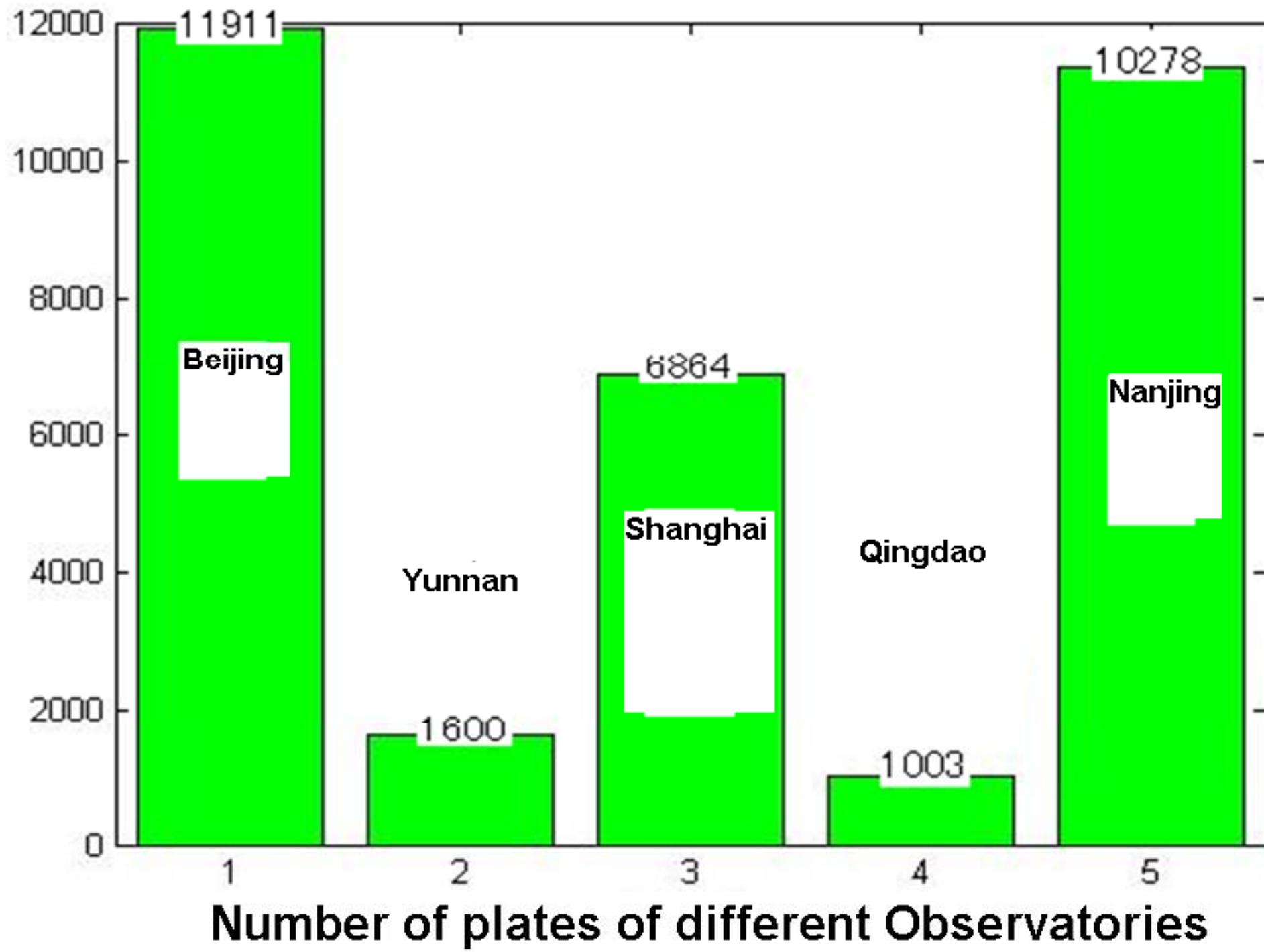
May 16, 1902

Observatory	Instrument	Period
Shanghai	40cm astrograph refractor	1901-1998
	156cm reflector	1988-1994
Beijing	40cm astrograph refractor	1968-1990
	60/90cm Schmidt +objective prism	1968-1990
Purple Mountain	15cm refractor	1949-1986
	40cm astrograph refractor	1964-1986
	60cm reflector	1954-1965
Yunnan	100cm reflector	1979-1985
	40cm solar spectrograph	1976-1997
Qingdao	32cm refractor	1960-1997
	15cm astrograph (Xi-Sha Island, Halley's Comet)	1986

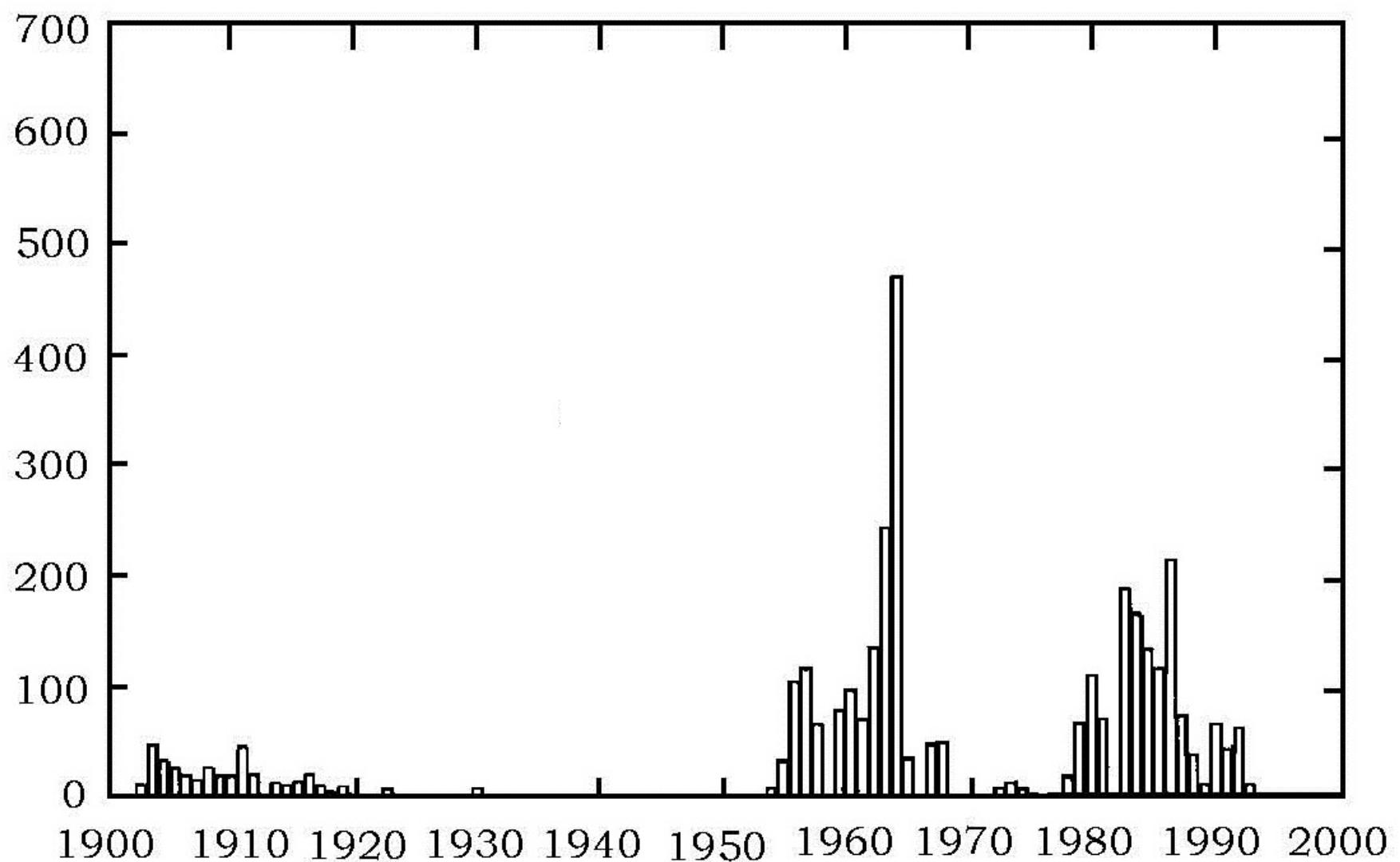




Sky coverage of Chinese plates



# Number of Plates of 40cm astrograph in Sheshan Station



# Plate information database in WFPDB format

天文台 代码	望远镜 口径	代码 后缀	原始底 片编号	编号 后缀	赤经 的时	赤经 的分	赤经 的秒	赤纬 符号 (即正 负号)	赤纬 的度	赤纬 的分	赤纬 的秒
IDobs	IDins	IDsuf1	IDno	IDsuf2	RAh	RAm	RAs	DE-	DEd	DEM	DEs
A3	I3	A1	I6	A1	I2	I2	I2	A1	I2	I2	I2
NAOC	40		DA616		00	00	00	+	66	00	00
NAOC	40		DA628		00	00	00	+	60	00	00
NAOC	40		DA627		00	00	00	+	60	00	00
NAOC	40		DA619		00	00	00	+	54	00	00
NAOC	40		DA745		00	00	00	+	48	00	00
NAOC	40		DA600		00	00	00	+	48	00	00
NAOC	40		DA22		00	06	30	+	28	53	54

观测日期的年 DATEy	观测日期的月 DATEm	观测日期的日 DATEd	观测日期的时 UTh	观测日期的分 UTm	观测日期的秒 UTs	观测日期出错代码 TCOD	目标或天区名称 OBJNAM
14	12	12	12	12	12	A1	A20
1965	01	06	23	49	0		1965b
1965	01	12	4	12	0		1965b
1984	11	22	3	13	0		$\varepsilon$ Gem
1965	01	08	0	58	0		$\varepsilon$ Gem
1965	01	09	2	31	0		$\varepsilon$ Gem

目标分 类代码	观测方法 代码	露光 次数	露光时间 (单位: 分钟)	底片类型	滤光片 型号	光谱波 段	底片大 小, X方向	底片大 小, Y方向
OBJTYP	METHOD	MULTEX	EXP	EMULS	FILT	SPEC	DIMx	DIMy
A2	I2	I2	F6.1	A11	A7	A2	I2	I2
	1	1		Agfa	spectrum		9	12
	1	1		Agfa	spectrum		9	12
	1	1	0.5	UV	Agfa		9	12
	1	1	0.5	UV	Agfa		9	12
	1	1	15.0	103a0			16	16



Old plate closet (wooden)



New plate closet (metal)



## “Digitization of Chinese Astronomical Plates” Project

Supported by Ministry of Science and Technology of China

PI: TANG Zheng-Hong

Period: 2012.6-2017.6

Four Tasks:

- (1) Spruce up Plate Archive at Sheshan Station of SHAO
- (2) Complete Plate Information Database
- (3) Digitizing Plates
- (4) Set up Virtual Observatory



Temperature:  $20 \pm 1^\circ\text{C}$   
Humidity:  $50\% \pm 5\%$

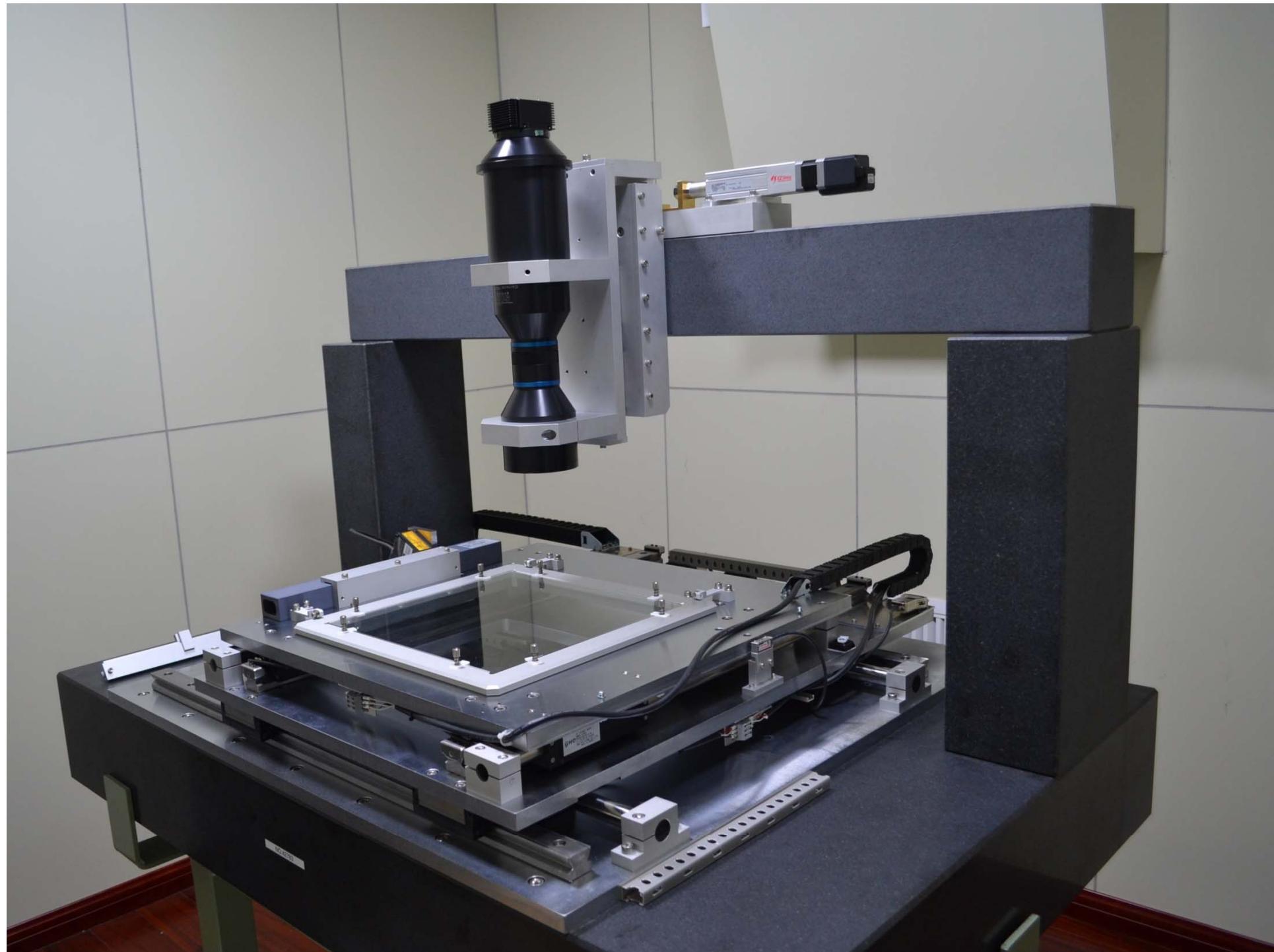
# Preliminary Results of New Digitizing Machine

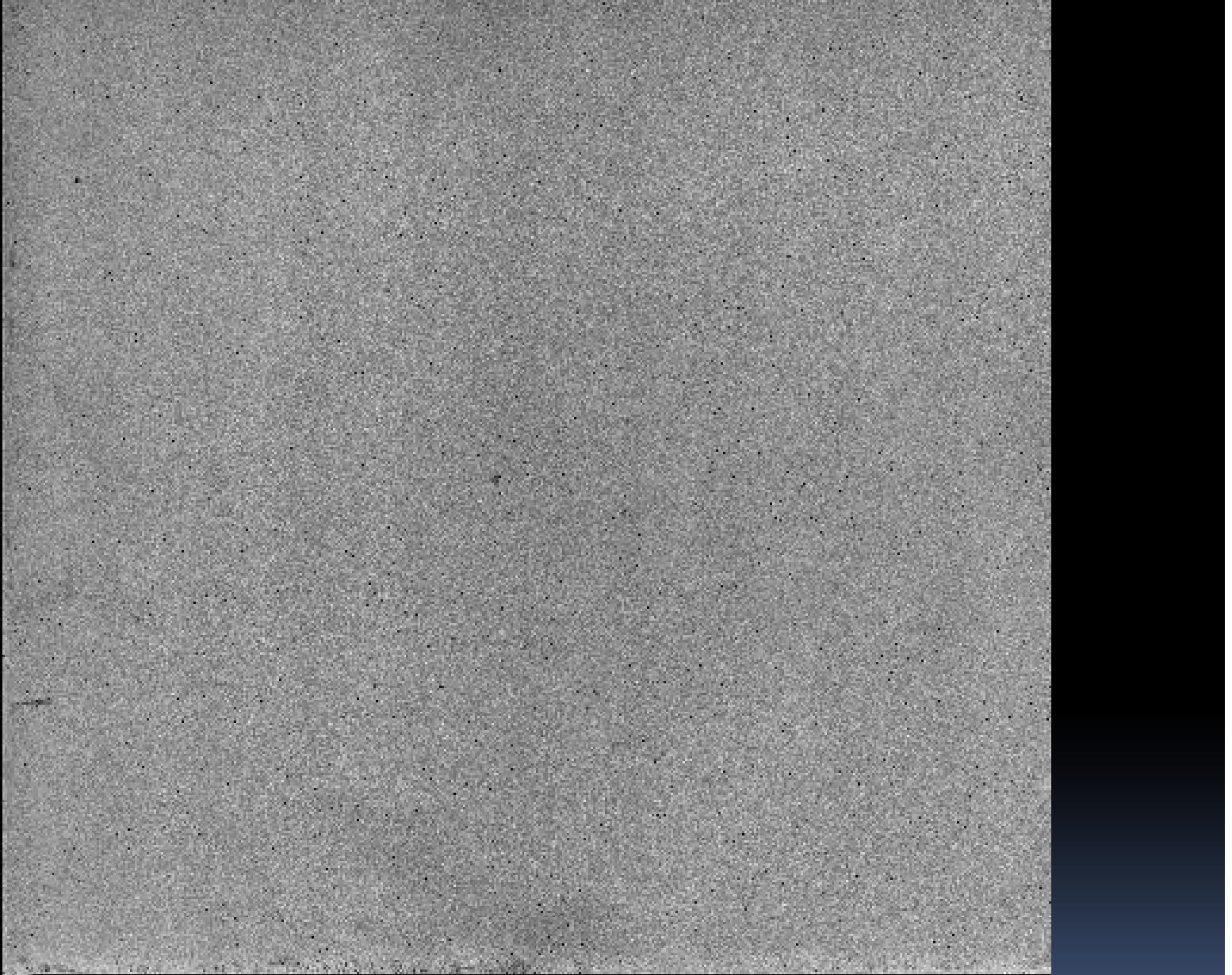
Main parameters:

- Astrometry: <0.5 um
- Photometry: <0.02 mag
- Optical density: 0--4.0
- Resolution: >2000 dpi
- Optical distortion: <0.0001
- Accuracy of moving platform: <0.2 um
- Stability of LED in time and space: <0.02
- Scanning area: >30cm\*30cm
- Scanning time: <10minutes

# Digitizing Machine

- Developed by Nishimura Co.,Ltd (Kyoto, Japan)
- Period: March-December, 2013
- Installed: January, 2014





Sample image from the machine

File

20140219\_164625\_hs.fit

Object

Value

WCS

Physical

X

Y

Image

X

Y

Frame 1

x

0.124

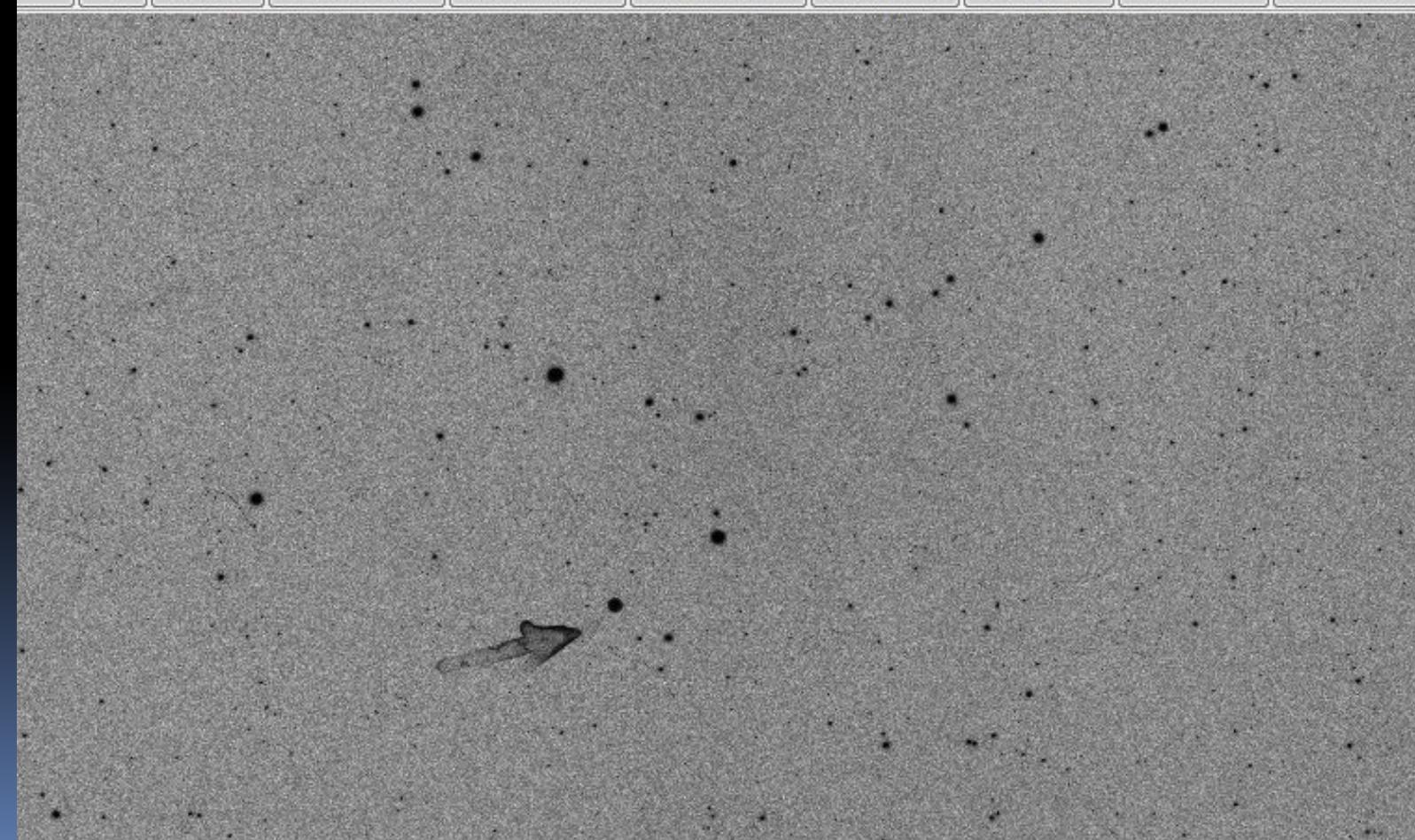
0.000

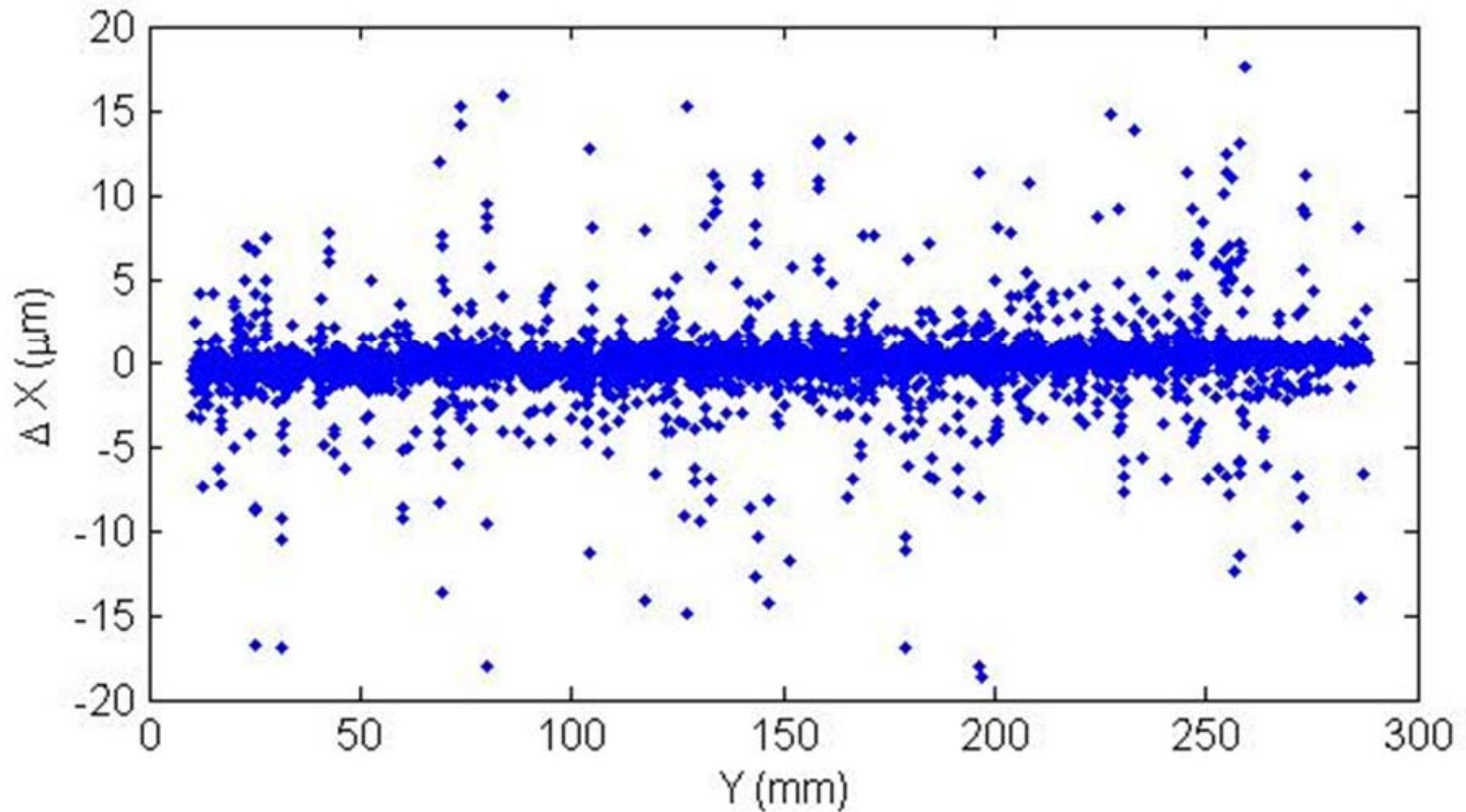
arcsec



file edit view frame bin zoom scale color region wcs help

- + to fit zoom 1/8 zoom 1/4 zoom 1/2 zoom 1 zoom 2 zoom 4 zoom 8





Stability of different scanning  
(based on positions of common stars)

## Work Plan:

- Further testing digitization.
- Regular digitization will be carried out in April.

Thanks!