OAOWFC 進捗状況
2011/08/09

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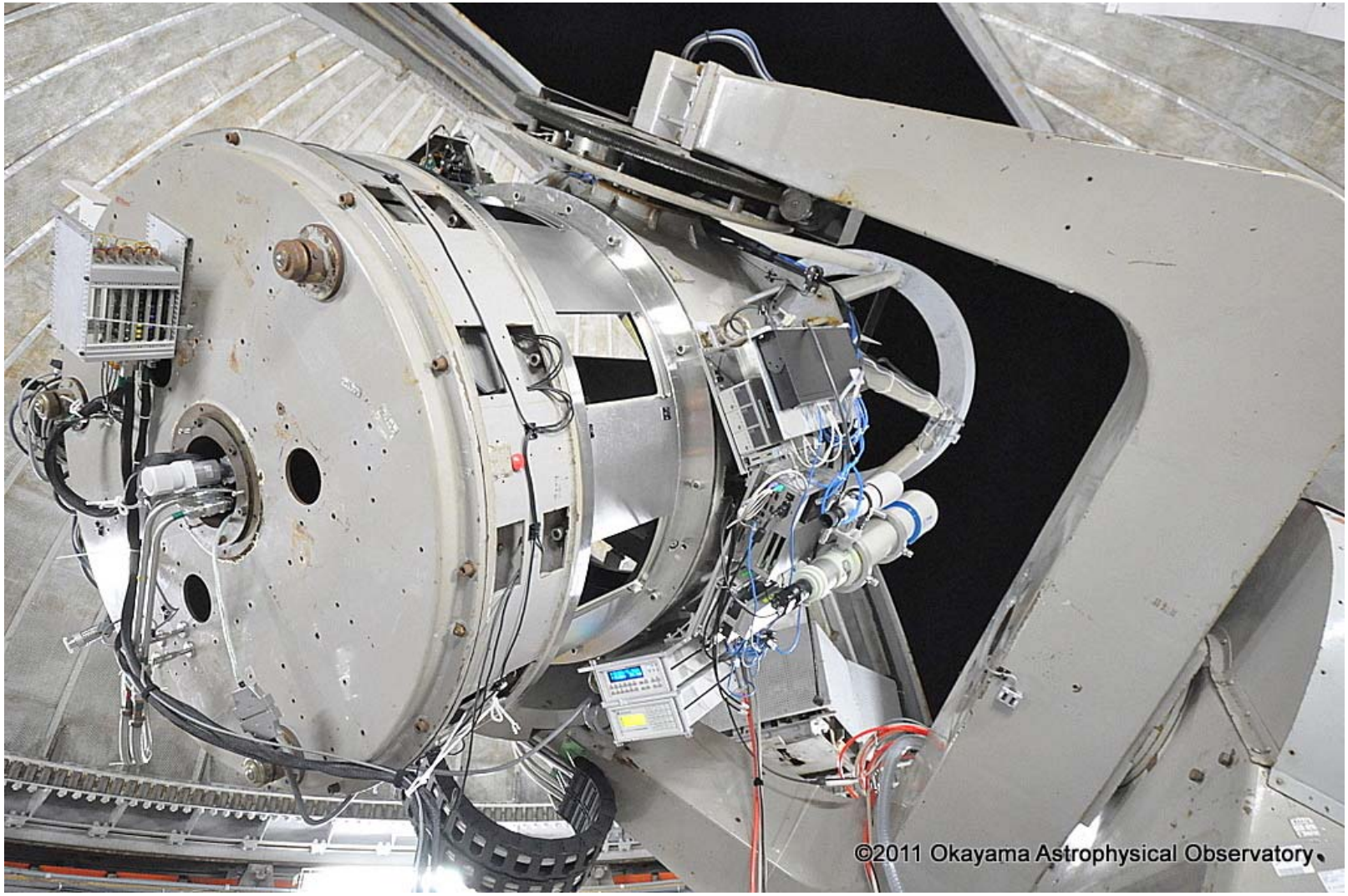
OAOWFC

- 中口径近赤外広視野撮像装置
  - 口径: 91 cm
  - 波長域: 0.9 – 2.5 um (*Y,J,H,Ks*-band)
  - 視野: 0.97 × 0.97 sq.deg. (HAWAII2RG, Teledyne)
  - F/2.5
  - 最大指向速度: 4 deg./sec
- 自律観測
  - 突発天体 (GRBs …)
  - 変光探査 (LPVs ….)
- 一部共同利用

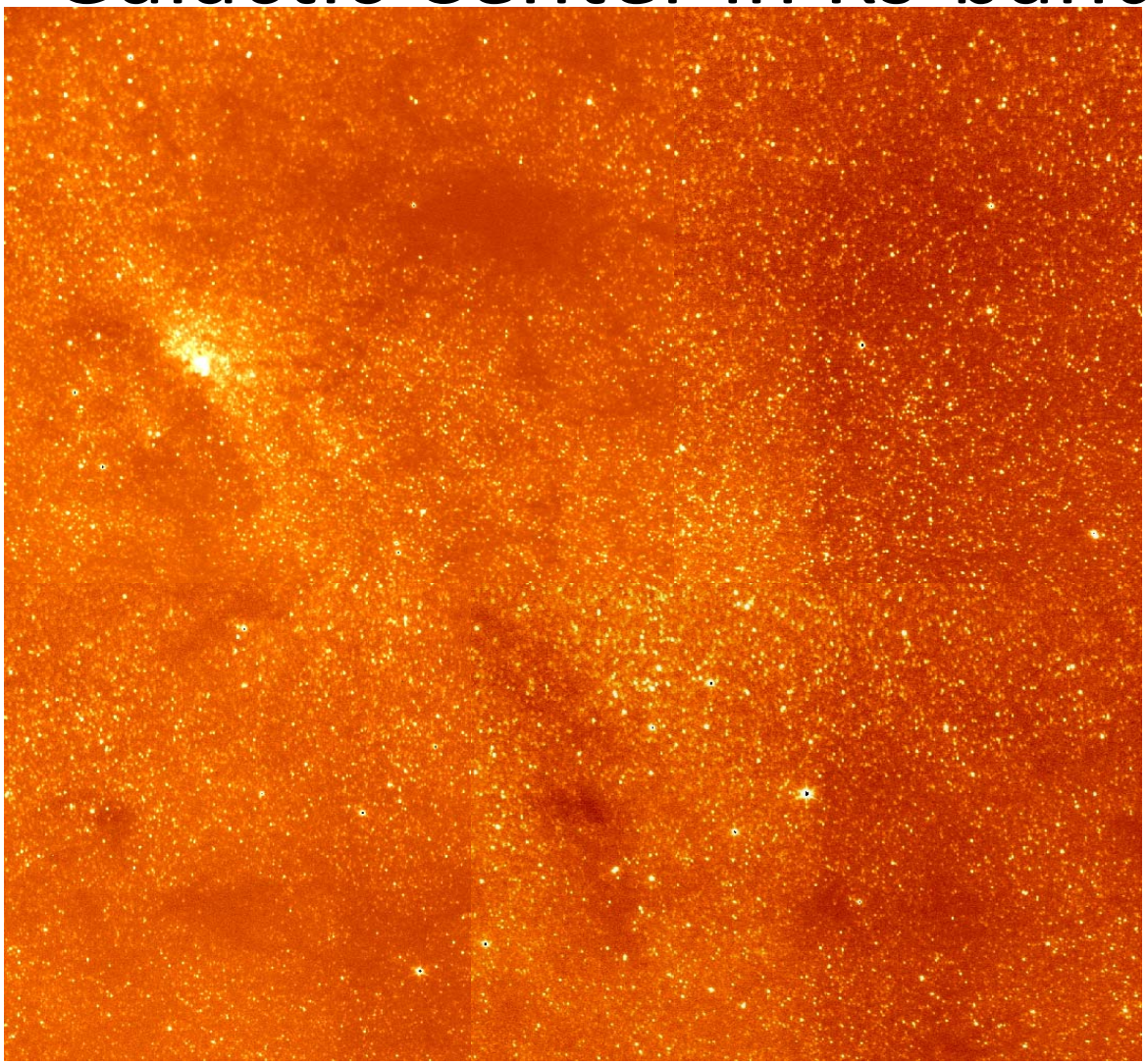
OAOWFC: 外観

OAOWFC: クライオスタット

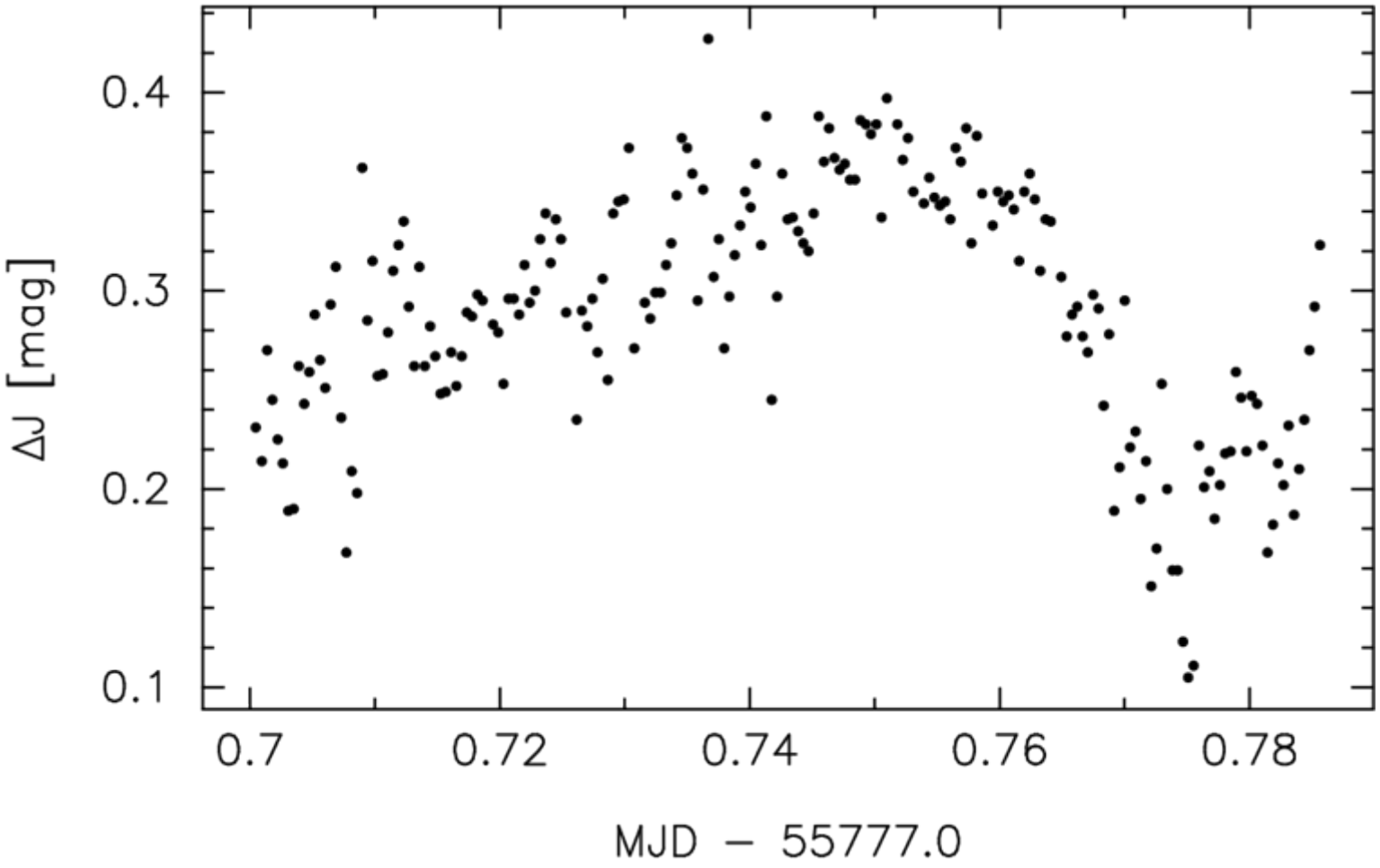
OAOWFC の外観



OAOWFC image of Galactic Center in Ks-band

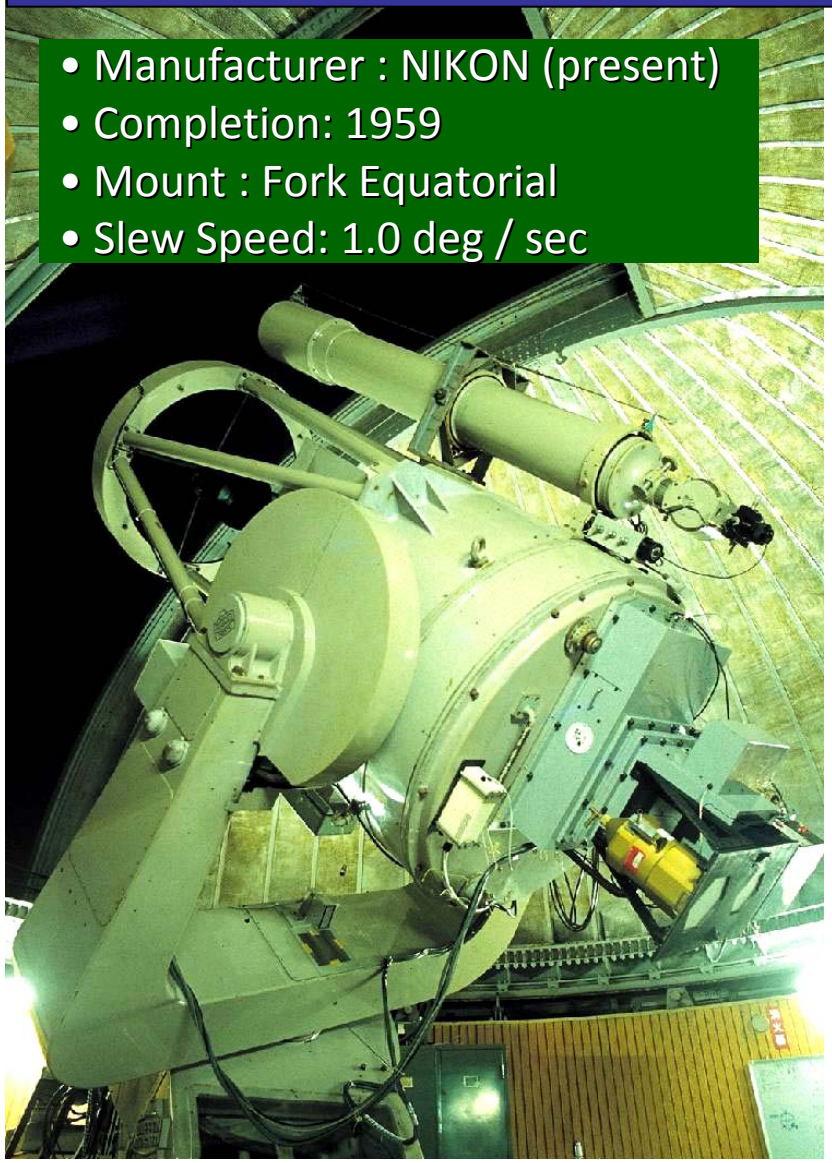


OAOWFC photometry of GP And



OAOWFC概要

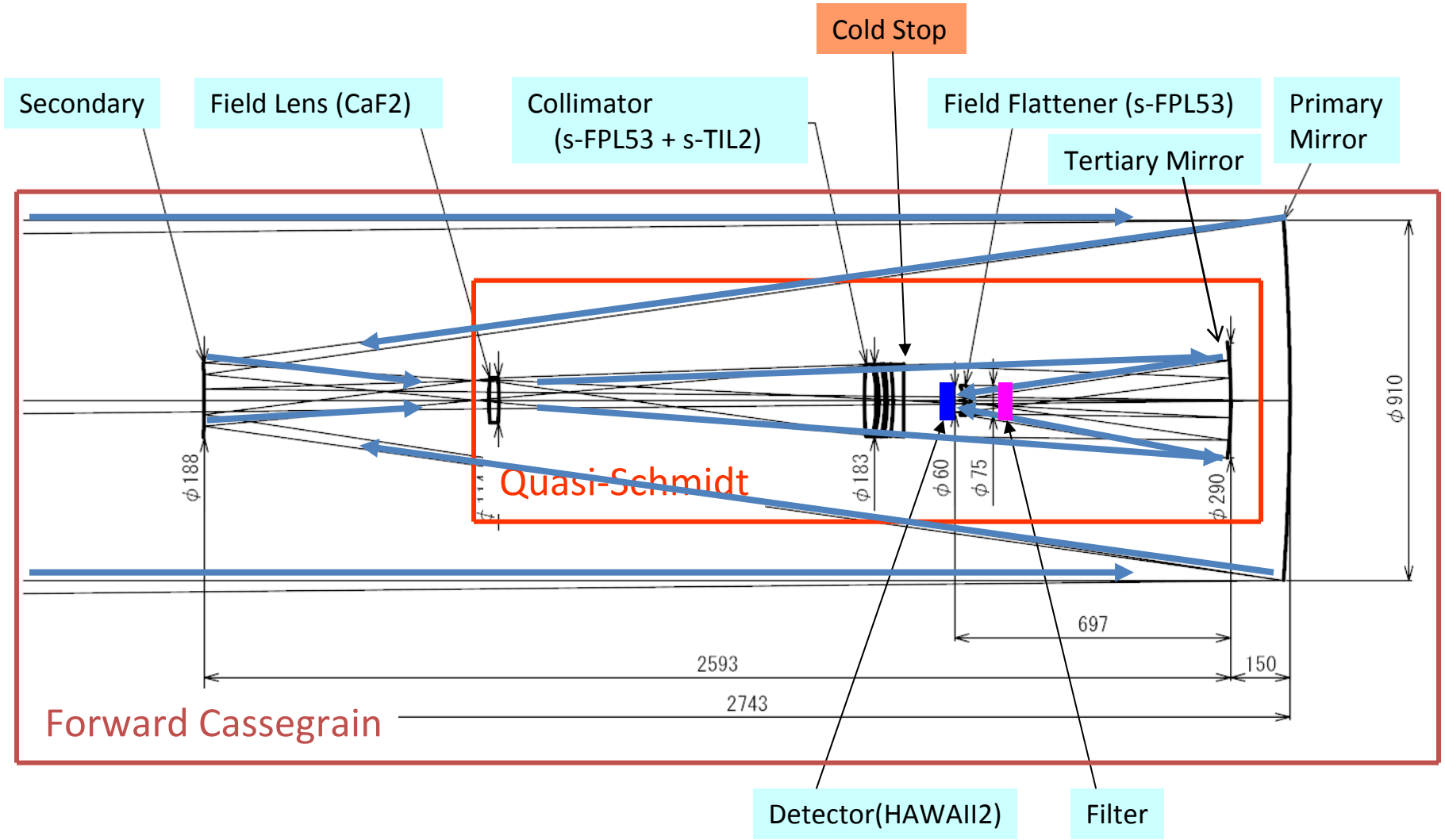
The OAO 0.9m Telescope



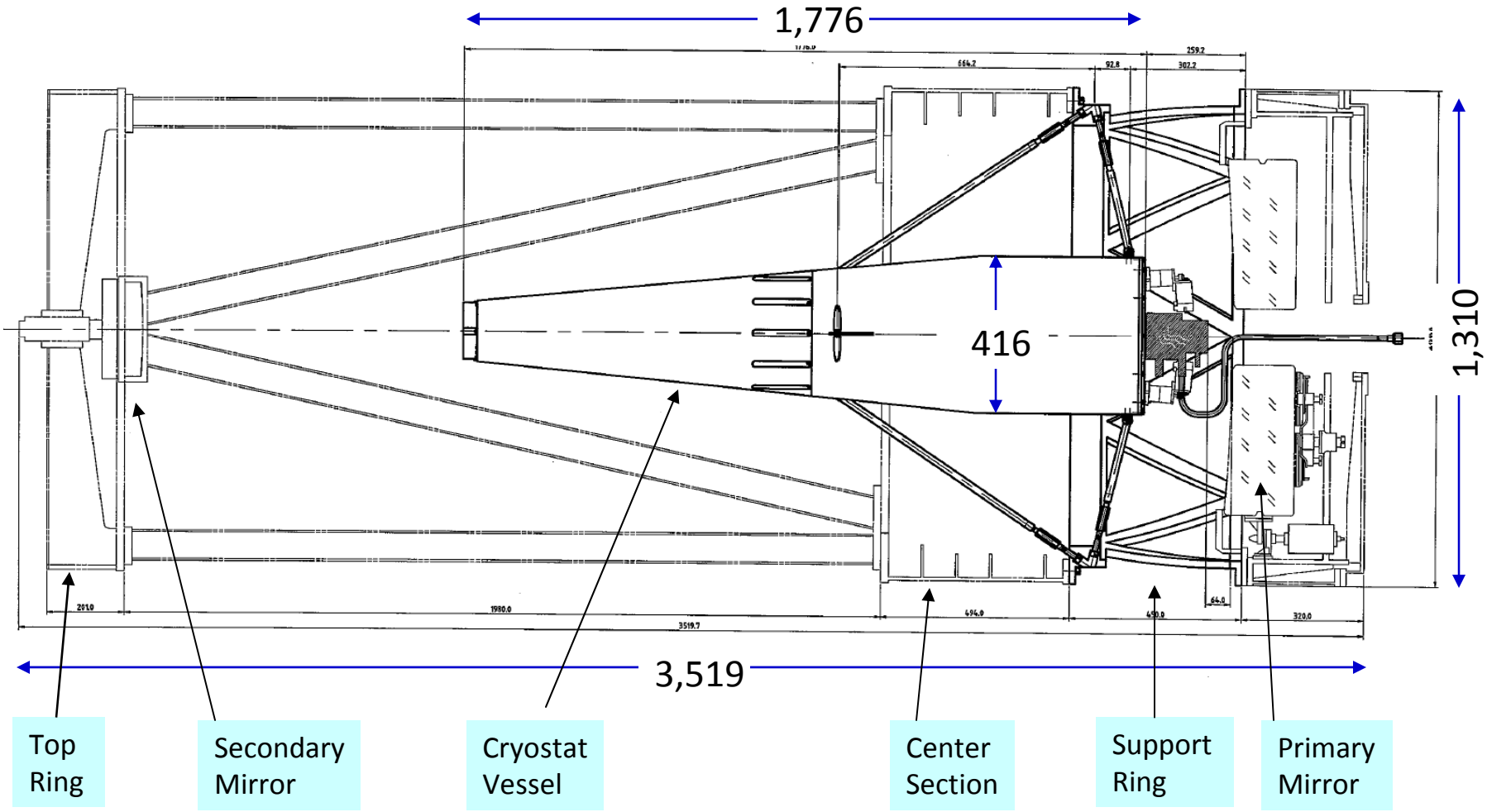
- Manufacturer : NIKON (present)
- Completion: 1959
- Mount : Fork Equatorial
- Slew Speed: 1.0 deg / sec

- Manufacturer : IHI
- Completion: 1959
- Rotation Speed: 3.0 deg / sec

Optical Layout

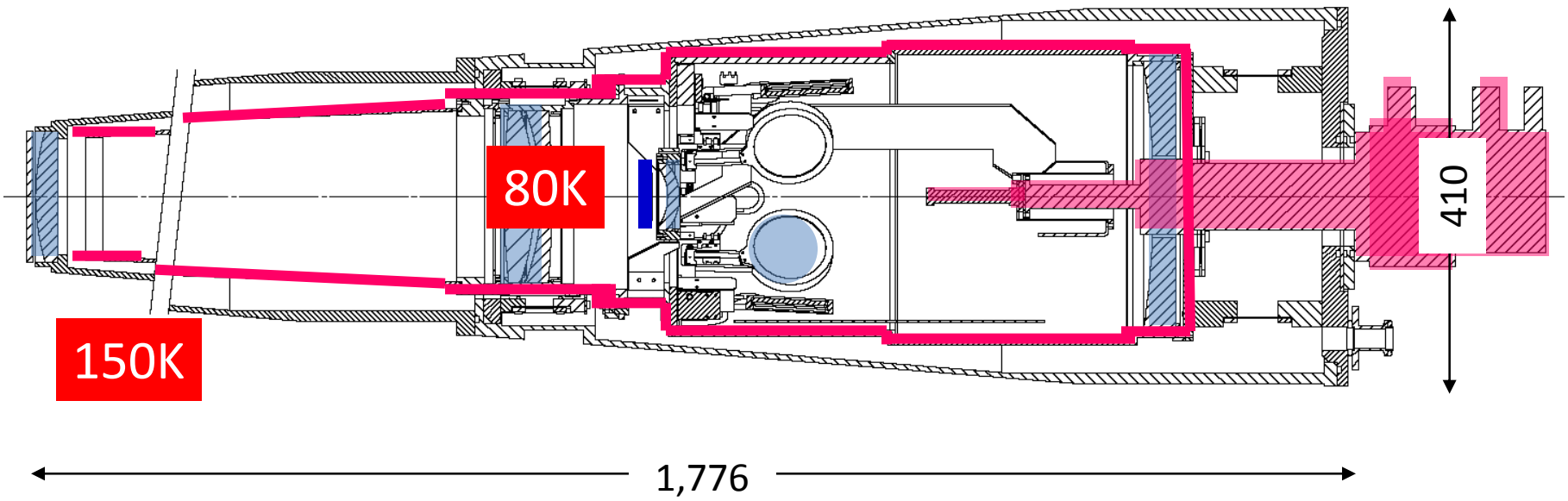


Overview of the OAOWFC

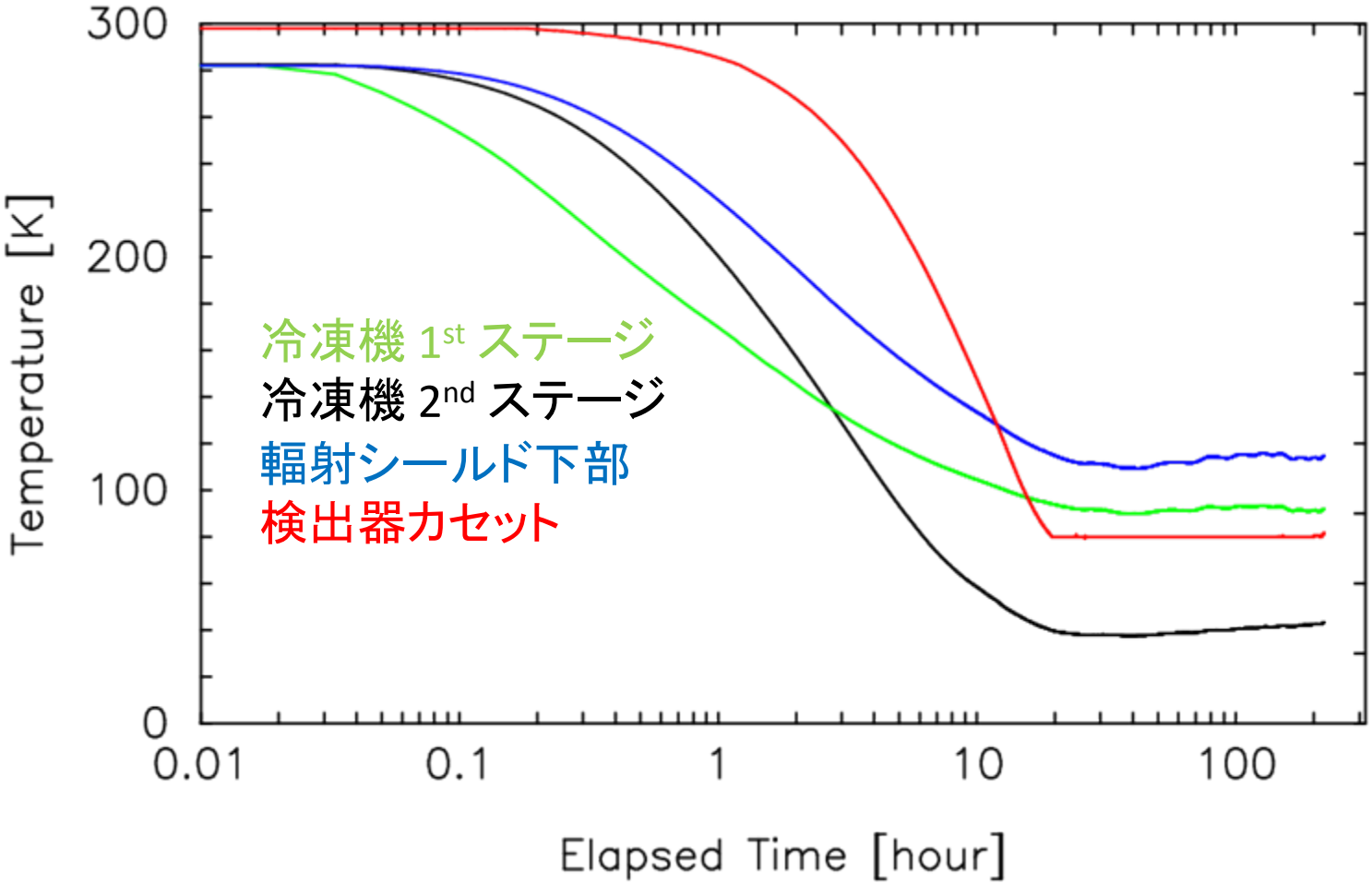


Cross sectional view of the quasi-Schimdt cryostat

W = 120 kg



温度変化


300
200
100
0
Temperature [K]
0.01
0.1
1
10
100
Elapsed Time [hour]
冷凍機 1st ステージ
冷凍機 2nd ステージ
輻射シールド下部
検出器カセット

OAOWFC Filter exchanger

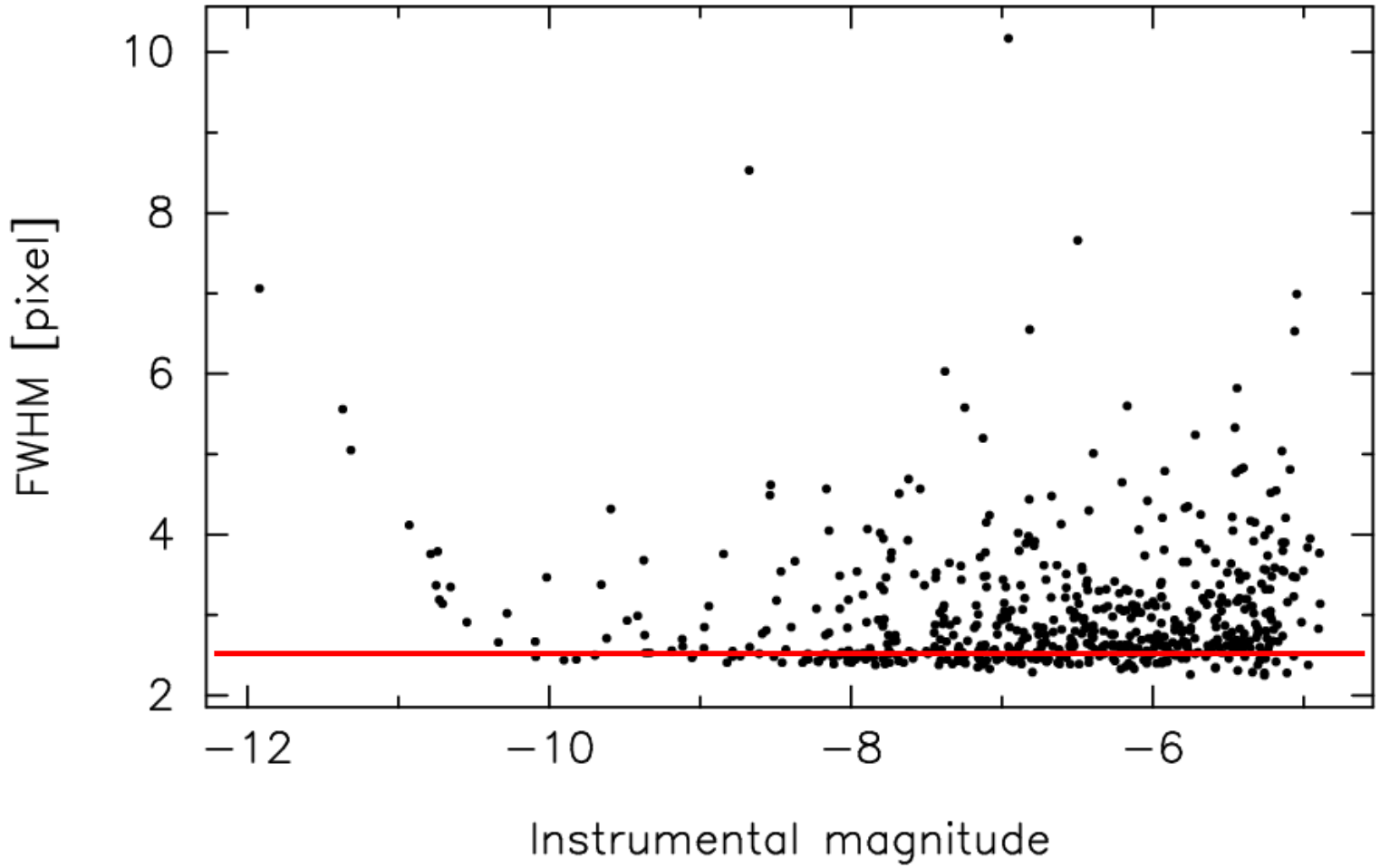
Specifications

Telescope	OAO 36-inch Telescope
Effective Diameter	910 mm
Optical configuration	Forward Cassegrain + Cooled quasi-Schmidt
Overall F-ratio	F/2.5
Central Obscuration	35 %
Detector	HAWAII 2-RG (HgCdTe/MBE) Teledyne
Format	2048 × 2048
Pixel Size	18.0 μm × 18.0 μm
	1.7 arcsec × 1.7 arcsec
Sensitive Area	37.9 × 37.9 mm^2
Field of View	0.97 × 0.97 sq.deg.
Readout Time	1.0 sec
Readout Noise	30 electrons
Operating Temperature	80K
Filter	Y, J, H, K_s (MKO system)

Eng. Run Summary

- Cooling: 24^h to operating temp.
- Image scale : 1.67 arcsec/pix, F/2.5 confirmed
- PSF: elongated, FWHM: 2.5 pix (mode)
  - Optical axis mismatch.
- Dark: 9.3 e^- /pix/s
- Noise: 90 e^- … Noise $_{ISLE}$ * 10
- Limit mag. : 14.0 mag. (J-band, 5 min. 10 σ)
  - 1.2 mag. brighter than expected.

Image size distribution



ESO VISTA

UKIRT WFCAM

IRIS

SIRIUS

他のサーベイ望遠鏡との比較

* 光路図から読み取った数値で公称値ではない

広視野近赤外装置同士の比較

装置	OAOWFC	WFCAM	VISTA
有効径 [m]	0.91	3.8	4.1
視野直径 [deg.]	1.34	0.93	1.65
中心遮蔽	0.35	0.16*	0.11*
口径比	2.5	2.5	3.3
検出器	HAWAII2RG ×1	HAWAII2 ×4	VIRGO × 16
フィルター	*Y,J,H,Ks*	*z,Y,J,H,K*	*Y,J,H,Ks*
画素スケール [“/pix]	1.7	0.40	0.34
視野 [deg^2/shot]	0.90	0.21	0.60
AΩ	0.38	*2.00*	*7.05*
相対感度	*0 mag.*	*+3.4 mag.*	*+3.6 mag.*

小口径近赤外変光モニタ計画同士の比較

	OAOWFC	IRIS Infrared imaging survey system	SIRIUS
所在地	Okayama	Cerro Amazones	South Africa
有効径 [m]	0.91	0.8	1.4
検出器	HAWAII2-RG×1	HAWAII 1K ×1	HAWAII 1K ×3
画素スケール[“/pix]	1.67	0.76	0.453
視野[deg^2]	0.95 × 0.95	0.22 × 0.22	0.12 ×0.12 ×3
AΩ	0.38	0.021	0.022 ×3
フィルター	*Y,J,H,Ks* (MKO)	*J,H,Ks* (2MASS)	*J,H,Ks* (MKO)
観測対象	LPVs, Transients	Variables in SFR	many
ファーストライト年	2011	2010	2000