NGAO
Natural Guide Star Mechanical

04/01/2010
MINI- REVIEW
1) FSM accuracy determination

2) Stages accuracy requirements
1) FSM accuracy determination

The on sky accuracy is 5mas, so the accuracy at the NGS focal plane needs to be $1.063\text{mm} \times 0.005\text{mas} = 5.3 \text{ um}$

FSM1 is 300mm away from the focal plane, its accuracy needs to be better than $5\text{um} / 300\text{mm} = 16.3 \times 10^{-6}$ or 3.43 arcsec
2) FSM 1

FSM 1 is a GMC-6 Newmark Gimbal with Mirror Cell for 6 inch optics
Repeatability: 5 arc seconds
Accuracy: 70 arc seconds
Resolution: 0.29 arc-sec
Elevation range: 360° continuous
Azimuth Range: ±90°
Load capacity: 25 lbs.
Operating Temperature: -20 +50°C
A motion controller is available with Ethernet port.

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3) FSM 2

FSM 2 is a AMG 100LP Aerotech 100mm (4in) Gimbal looking for a 2 in gimbal
Repeatability: 4 arc seconds
Accuracy: 80 arc seconds
Resolution: 0.18 arc-sec
Elevation range: 360° continuous
Azimuth Range: 360° continuous
Load capacity: 15 lbs.
4) NGS Motion Control

All Stages Rated at -15C
Operating Closed loop
Currently investigating PI and MICOS (PI Vendor will come over this afternoon to discuss and a quote from MICOS is in progress

Elevation Stage
100µm range
Position Accuracy: 2nm

Translation Stage
25mm range
Position Accuracy: 2.5µm

Translation Stage
50mm range
Position Accuracy: TBD

Translation Stage
25mm range
Position Accuracy: TBD