

Nasmyth focus station

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Surface data summary (nominal values)

Radius (mm)	Thickness (mm)	Glass	Diameter (mm)	Comment
	Infinity		0	OBJ
	105.90		4180	STO
-20879.00		MIRROR	4180	Primary mirror
	-8034.96			Axial thickness from primary mirror to secondary mirror
-6231.38		MIRROR	1001	Secondary mirror
	6284.96			Axial thickness from secondary mirror to tertiary mirror
Infinity		MIRROR	616 x 432	Tertiary mirror (elliptical)
-	-4249.79		-	Paraxial focus from tertiary mirror

Overview flange distances / focal distances at different Nasmyth foci (measured values)

Ghril

Distance from tertiary mirror vertex to trunnion (bearing preload flange): 3505mm

Total distance from trunnion to front face derotator flange: 163mm
Total distance: $3505 + 163 = \underline{3668\text{mm}}$ from tertiary to rotator flange

When focus is at 98.2 (for GHRIL)

IR derotator, focus 451mm away from flange: total= $3668 + 451 = \underline{4119\text{mm}}$

No/ Optical derotator, focus 585mm away from flange: total= $3668 + 585 = \underline{4253\text{mm}}$

Grace

Distance from tertiary mirror vertex to trunnion (bearing preload flange): 3505mm

Total distance from trunnion to front face derotator flange: 156mm

Total distance: $3505 + 156 = \underline{3661\text{mm}}$ from tertiary to rotator flange

When focus is at 98.4 (for GRACE)

IR derotator, focus 462mm away from flange: total= $3661 + 462 = \underline{4123\text{mm}}$

No/ Optical derotator, focus 596mm away from flange: total= $3661 + 596 = \underline{4257\text{mm}}$

Checking focal distances: GHRIL vs GRACE

- Focus **Ghril** (from tertiary to focus without derotator):
 - 4253mm– secondary mirror focus 98.20
 - 4257mm– secondary mirror focus 98.40
- Focus **Ghril** (from tertiary to focus with IR derotator):
 - 4119mm– secondary mirror focus 98.20
 - 4123mm– secondary mirror focus 98.40
- Focus **Grace** (from tertiary to focus without derotator):
 - 4253mm – secondary mirror focus 98.20
 - 4257mm – secondary mirror focus 98.40
- Focus **Grace** (from tertiary to focus with IR):
 - 4119mm – secondary mirror focus 98.20
 - 4123mm – secondary mirror focus 98.40