T1000717-v5
ETM HWS imaging solution - (distances pulled from G1100873). Full ETM distancs

Data from T0900385 - v06 and G1100873. [Lab book 13 - page 5 & page 10]

Telescope parabolic T1 RoC		4000 mm
Telescope parabolic T2 RoC		-200 mm
Telescope M1 to M2		1902.6 mm
Distance from ETM to Telescope		1429 mm
ETM curvature		2245 m
ETM thickness		20cm
ITM curvature		1934 m
Arm Length		3995 m
Lambda		532 nm
ETM substrate: Fused silica:		n = 1.46089

Imaging solution

M2 to f0	(distance)	[5273, 4314]mm
[M2 to in-vac PM]		= 762mm + 604mm = 1366mm (D1002460)
[in-vac periscope mirror to ALS table]		= 1858mm (D0900435, D0902168, D0900436, D0902163)
[ALS input to top periscope]		= 101mm (D1201448)
[top periscope mirror to bottom]		= 419mm (D1201448)
[BPM to f0] - X		= 1529mm (D1201448)
[BPM to f0] - Y		= 570mm (D1100607)
f0	(focal length)	2236.1 mm [CVI PLCX-50.8-1030.2-UV-532]
f0 to f1:	(distance)	610 mm
f1	(focal length)	2236.1 mm [CVI PLCX-25.4-1030.2-UV-532]
f1 to f2	(distance)	[928.3, 1079.0] mm
f2	(focal length)	-0.5589 mm [CVI PLCC-25.4-257.2-

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UV-532]
f2 to HWS    (distance)                [1308, 903.6] mm
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Y - Arm

X - Arm

Solutions

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solnSimpleX
solnSimpleY
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$$\{f0 \to 2.2361,\ f1 \to 2.2361,\ f2 \to -0.5589,\ L0 \to 0.61,\ L1 \to 0.928255,\ L2 \to 1.30764\}$$

$$\{f0 \to 2.2361,\ f1 \to 2.2361,\ f2 \to -0.5589,\ L0 \to 0.61,\ L1 \to 1.07902,\ L2 \to 0.903587\}$$

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M1 = {{1, L2}, {0, 1}}.{{1, 0}, {-1/f2, 1}}.{{1, L1}, {0, 1}}.{{1, 0}, {-1/f1, 1}}.{{1, L0}, {0, 1}}.{{1, 0}, {-1/f0, 1}}.{{1, 5.273}, {0, 1}}.
     {{1, 0}, {-2/T2RoC, 1}}.{{1, T1toT2}, {0, 1}}.{{1, 0}, {-2/T1RoC, 1}}.{{1, ETMtoT1}, {0, 1}} /. solnSimpleX;
MatrixForm[
 M1]
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$$\begin{pmatrix} -0.0487805 & -1.24345 \times 10^{-14} \\ -0.0243741 & -20.5 \end{pmatrix}$$

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M1 = {{1, L2}, {0, 1}}.{{1, 0}, {-1/f2, 1}}.{{1, L1}, {0, 1}}.{{1, 0}, {-1/f1, 1}}.{{1, L0}, {0, 1}}.{{1, 0}, {-1/f0, 1}}.{{1, 4.314}, {0, 1}}.
     {{1, 0}, {-2/T2RoC, 1}}.{{1, T1toT2}, {0, 1}}.{{1, 0}, {-2/T1RoC, 1}}.{{1, ETMtoT1}, {0, 1}} /. solnSimpleY;
MatrixForm[
 M1]
```

$$\begin{pmatrix} -0.0487805 & -1.33227 \times 10^{-14} \\ -0.0347882 & -20.5 \end{pmatrix}$$