

CORE OPTICS TILT ANGLES

E000028-C-D

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Table 1: Revision History

REV	DATE	AUTHOR	CHECKED	DATE	DCN/DESCRIPTION
A	1-19-00	D. Coyne			E000032/INITIAL RELEASE
B	6-22-00	J. Romie			E000330/CHANGE LLO, 4K BS SURFACE NORMAL & PITCH
C	8-4-00	J. Romie			E000396/ADD TILTS FOR MMT3s AS REFERENCE

IAS Theodolite/ Autocolimator Positions

This notebook verifies the positions and orientations of the IAS theodolite/ autocollimator for initial alignment and positioning of the core optics. It also calculates the pitch angles of the COC relative to the local horizontal. MMT3 data is included for reference

Global to Local Coordinate Transformation Matrices

Optic surface positions & orientations

Suspension Pitch Angles

2km Intererometer at Hanford

Table 2: LHO 2k

OPTIC	U1	V1	W1	Pitch	radians	deg	min.	sec
RM HR (p3)	-1	-.000137	-.0183	down	.0183	1	2	51
OFy	-.924	-.383	0		-4.35e-12	0	0	0
FMy (p6)	.707	.707	.00289	up	-.00289	0	-9	-57
ITMy HR (p8)	7.73e-9	1	1.25e-5	up	-.0000125	0	0	-3
OFbs	-1	0	-.00628	down	.00628	0	21	36
BS bs (p4)	.707	-.707	.00645	up	-.00645	0	-22	-11
OFx	-.00049	-1	-.00331	down	.00331	0	11	22
FMx (p9)	.707	.707	.00288	up	-.00288	0	-9	-53
ITMx HR (p11)	1	0	-.000619	down	.000619	0	2	8
ETMx HR	-1	0	.000306	up	-.000306	0	-1	-3
ETMy HR	-2.02e-7	-1	-.000326	down	.000326	0	1	7
MMT3				down	.001962.	0	6	44

4km Interferometer at Hanford

Table 3: LHO 4k

OPTIC	U1	V1	W1	Pitch	radians	deg	min	sec
RM HR (p3)	1	.000137	-.0195	down	.0195	1	7	6
BS (p4)	-.707	.707	.00733	up	.00733	0	25	12
ITMx HR (p7)	1	0	-.000619	down	.000619	0	2	8
ITMy HR (p9)	7.73e-9	1	.0000125	up	-.0000125	0	0	-3
ETMx HR	-1	0	-7.84e-6	down	7.84e-6	0	0	2
ETMy HR	-3.97e-7	-1	-.000639	down	.000639	0	2	12
MMT3				down	.001829	0	6	17

4km Interferometer at Livingston

Table 4: LLO 4k

OPTIC	U1	V1	W1	Pitch	radians	deg	min	sec
RM HR (-p3)	1	.000125	-.0192	down	.0192	1	6	3
BS (p4)	-.707	.707	.00667	up	.00667	0	22	56
ITMx HR (p7)	1	0	-.000312	down	.000312	0	1	4
ITMy HR (p9)	-1.91e-7	1	-.000611	down	.000611	0	2	6
ETMx HR	-1	0	-.000315	down	.000315	0	1	5
ETMy HR	-5.85e-9	-1	-.0000188	down	.0000188	0	0	4
MMT3				down	.001839	0	6	19