

Advanced LIGO H1 Optical Layout

Optical parameters from LIGO-T0900043-08

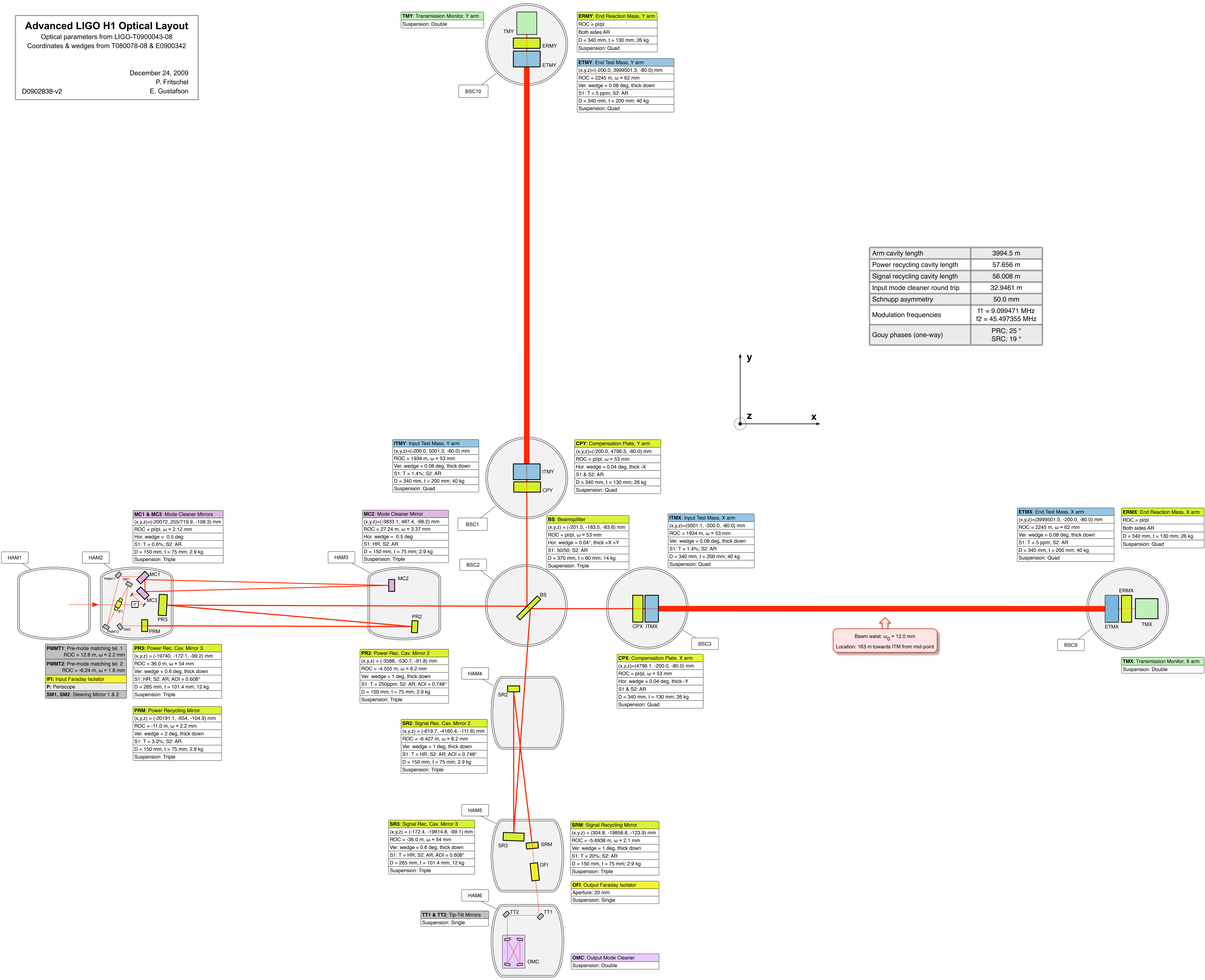
Coordinates & wedges from T080078-08 & E0900342

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P. Fritschel

E. Gustafson

D0902838-v2



TMY: Transmission Monitor, Y arm
Suspension: Double

ERMY: End Reaction Mass, Y arm
ROC = pl/pl
Both sides AR
D = 340 mm, t = 130 mm; 26 kg
Suspension: Quad

ETMY: End Test Mass, Y arm
(x,y,z)=(-200.0, 3999501.3, -80.0) mm
ROC = 2245 m, ω = 62 mm
Ver. wedge = 0.08 deg, thick down
S1: T = 5 ppm; S2: AR
D = 340 mm, t = 200 mm; 40 kg
Suspension: Quad

ITMY: Input Test Mass, Y arm
(x,y,z)=(-200.0, 5001.3, -80.0) mm
ROC = 1934 m, ω = 53 mm
Ver. wedge = 0.08 deg, thick down
S1: T = 1.4%; S2: AR
D = 340 mm, t = 200 mm; 40 kg
Suspension: Quad

CPY: Compensation Plate, Y arm
(x,y,z)=(-200.0, 4796.3, -80.0) mm
ROC = pl/pl, ω = 53 mm
Hor. wedge = 0.04 deg, thick -X
S1 & S2: AR
D = 340 mm, t = 130 mm; 26 kg
Suspension: Quad

MC2: Mode Cleaner Mirror
(x,y,z)=(-3833.1, 487.4, -98.2) mm
ROC = 27.24 m, ω = 3.37 mm
Hor. wedge = 0.5 deg
S1: HR; S2: AR
D = 150 mm, t = 75 mm; 2.9 kg
Suspension: Triple

BS: Beamsplitter
(x,y,z)=(-201.5, -183.5, -83.8) mm
ROC = pl/pl, ω = 53 mm
Hor. wedge = 0.04°, thick +X +Y
S1: 50/50; S2: AR
D = 370 mm, t = 60 mm; 14 kg
Suspension: Triple

ITMX: Input Test Mass, X arm
(x,y,z)=(5001.1, -200.0, -80.0) mm
ROC = 1934 m, ω = 53 mm
Ver. wedge = 0.08 deg, thick down
S1: T = 1.4%; S2: AR
D = 340 mm, t = 200 mm; 40 kg
Suspension: Quad

ETMX: End Test Mass, X arm
(x,y,z)=(3999501.0, -200.0, -80.0) mm
ROC = 2245 m, ω = 62 mm
Ver. wedge = 0.08 deg, thick down
S1: T = 5 ppm; S2: AR
D = 340 mm, t = 200 mm; 40 kg
Suspension: Quad

ERMX: End Reaction Mass, X arm
ROC = pl/pl
Both sides AR
D = 340 mm, t = 130 mm; 26 kg
Suspension: Quad

TMX: Transmission Monitor, X arm
Suspension: Double

PMMT1: Pre-mode matching tel. 1
ROC = 12.8 m, ω = 2.2 mm
PMMT2: Pre-mode matching tel. 2
ROC = -6.24 m, ω = 1.8 mm
IFI: Input Faraday Isolator
P: Periscope
SM1, SM2: Steering Mirror 1 & 2

MC1 & MC3: Mode Cleaner Mirrors
(x,y,z)=(-2007.2, 255/719.9, -108.3) mm
ROC = pl/pl, ω = 2.12 mm
Hor. wedge = 0.5 deg
S1: T = 0.6%; S2: AR
D = 150 mm, t = 75 mm; 2.9 kg
Suspension: Triple

PR3: Power Rec. Cav. Mirror 3
(x,y,z)=(-19740, -172.1, -99.2) mm
ROC = 36.0 m, ω = 54 mm
Ver. wedge = 0.6 deg, thick down
S1: HR; S2: AR; AOI = 0.608°
D = 265 mm, t = 101.4 mm; 12 kg
Suspension: Triple

PRM: Power Recycling Mirror
(x,y,z)=(-20191.1, -654, -104.9) mm
ROC = -11.0 m, ω = 2.2 mm
Ver. wedge = 2 deg, thick down
S1: T = 3.0%; S2: AR
D = 150 mm, t = 75 mm; 2.9 kg
Suspension: Triple

PR2: Power Rec. Cav. Mirror 2
(x,y,z)=(-3588, -530.7, -91.8) mm
ROC = -4.555 m, ω = 6.2 mm
Ver. wedge = 1 deg, thick down
S1: T = 250ppm; S2: AR; AOI = 0.748°
D = 150 mm, t = 75 mm; 2.9 kg
Suspension: Triple

SR2: Signal Rec. Cav. Mirror 2
(x,y,z)=(-619.7, -4160.4, -111.6) mm
ROC = -6.427 m, ω = 8.2 mm
Ver. wedge = 1 deg, thick down
S1: T = HR; S2: AR; AOI = 0.748°
D = 150 mm, t = 75 mm; 2.9 kg
Suspension: Triple

SR3: Signal Rec. Cav. Mirror 3
(x,y,z)=(-172.4, -19614.8, -99.1) mm
ROC = -36.0 m, ω = 54 mm
Ver. wedge = 0.6 deg, thick down
S1: T = HR; S2: AR; AOI = 0.608°
D = 265 mm, t = 101.4 mm; 12 kg
Suspension: Triple

SRM: Signal Recycling Mirror
(x,y,z)=(304.8, -19858.8, -123.9) mm
ROC = -5.6938 m, ω = 2.1 mm
Ver. wedge = 1 deg, thick down
S1: T = 20%; S2: AR
D = 150 mm, t = 75 mm; 2.9 kg
Suspension: Triple

OFI: Output Faraday Isolator
Aperture: 20 mm
Suspension: Single

OMC: Output Mode Cleaner
Suspension: Double

TT1 & TT2: Tip-Tilt Mirrors
Suspension: Single

Beam waist: $\omega_0 = 12.0$ mm
Location: 163 m towards ITM from mid-point