

Active wavefront control mode for LHO. Run on 28-Sep-2017 21-29-57

aidanbrooks - Aidan-Brookss-MacBook-Pro.local

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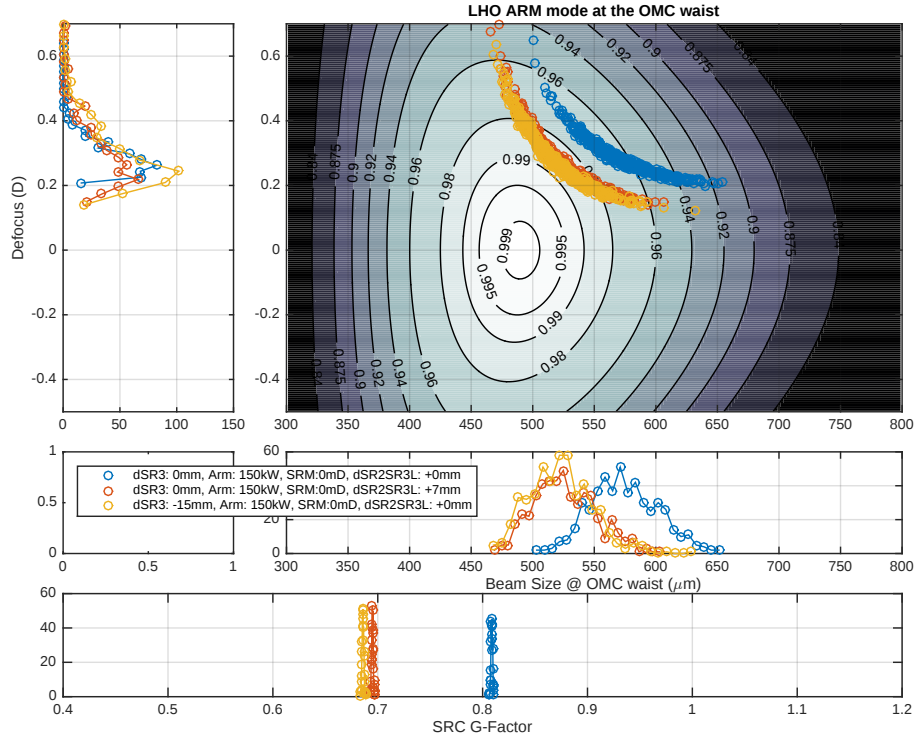


Figure 1: The mode-matching phase space with mode-matching losses between the possible IFO modes (blue dots) and the OMC mode (red dot).

Parameter name	Value	Uncertainty used here
Arms		
Arm power	150.0kW	0 W
ITM ROC	1939.00 m [1]	m
ITM ROC distorted	1943.97 m	m
ITM absorption	241 ppb	1 ppb
ETM ROC	2240.00 m [2]	m
ETM ROC distorted	2245.32 m	m
ETM absorption	205 ppb	1 ppb
SRC		
Common CP lens	15 μ D [3]	0 μ D
SR3 ROC	36.013 m [4]	0.05 mm [10]
SR3-ITM distance	24.368 m [7]	0.03 mm [12]
SR2 ROC	-6.425 m [5]	0.03 mm [11]
SR2-SR3 distance	15.461 m [8]	0.03 mm [12]
SRM ROC	-5.678 m [6]	0.00 mm
SRM-SR2 distance	15.739 m [9]	0.03 mm [12]
OMC		
SRM lens	0 μ D	0 μ D
SRM-OM1 distance	3.410 m [17]	3.0 mm [21]
OM1 ROC	4.600 m [13]	35.0 mm [15]
OM1-OM2 distance	1.390 m [18]	3.0 mm [21]
OM2 ROC	1.700 m [14]	90.0 mm [16]
OM2-OM3 distance	0.640 m [19]	3.0 mm [21]
OM3 ROC	flat	0
OM3-OMC Waist distance	0.450 m [20]	3.0 mm [21]

References

- [1] <https://galaxy.ligo.caltech.edu/optics/> ITM03
- [2] <https://galaxy.ligo.caltech.edu/optics/> mean([ETM08 ETM12])
- [3] T1400602-v2 - aLIGO ITM and CP Homogeneity survey
- [4] <https://galaxy.ligo.caltech.edu/optics/> SR3 02 - Ligo measurement
- [5] E1200548 [Section 3.1, page 2]
- [6] <https://galaxy.ligo.caltech.edu/optics/> SRM 06
- [7] E1400205-v4: IAS LHO Primary Optics As Built Alignment Summary
- [8] E1400205-v4: IAS LHO Primary Optics As Built Alignment Summary
- [9] E1400205-v4: IAS LHO Primary Optics As Built Alignment Summary
- [10] Gari-Lynn personal communication 16-Feb-2017
- [11] E1200548 [Section 3.1, page 2]
- [12] Best guess
- [13] <https://dcc.ligo.org/LIGO-E1100056>
- [14] <https://dcc.ligo.org/LIGO-E1100056>
- [15] <https://dcc.ligo.org/LIGO-E1100056>
- [16] <https://dcc.ligo.org/LIGO-E1100056>
- [17] Anamaria LLO aLOG 17587
- [18] Anamaria LLO aLOG 17587
- [19] Anamaria LLO aLOG 17587
- [20] Anamaria LLO aLOG 17587
- [21] Best Guess

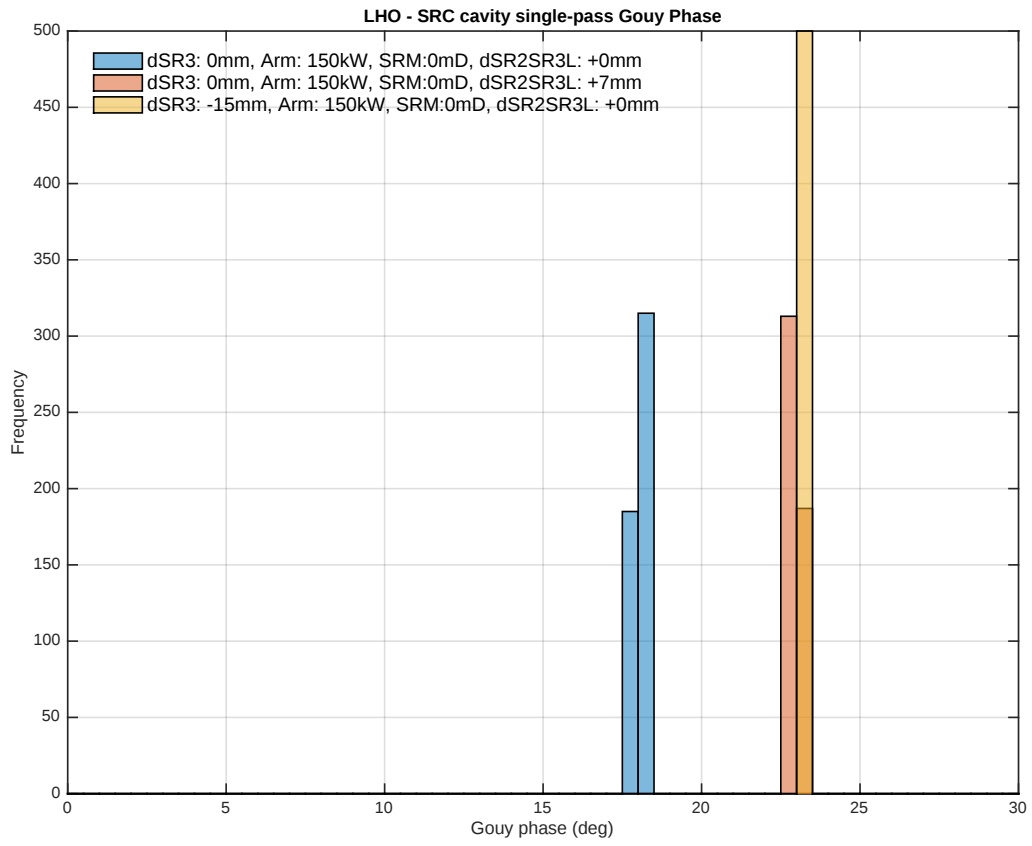


Figure 2: The distribution of Gouy phases.