



LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

LIGO Laboratory / LIGO Scientific Collaboration

LIGO-T1300558-v1

June 18, 2013

L1 DRMI Measurements: a checklist

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This is an internal working note
of the LIGO Laboratory

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The following table lists the measurements that are planned to be made during the Dual-Recycled Michelson Interferometer (DRMI) integration phase at LLO (L1 interferometer). This is intended essentially as a check-list; where necessary, more details can be found in the references listed.

Measurement	notes
PRC cavity length	See T1300009 for scheme
SRC cavity length	Still analyzing if these are feasible and worthwhile
Schnupp asymmetry	
Michelson contrast defect	Compare with SIS model using as-built optic phase maps
Power recycling gain	Measure using PR2 transmission beam
Signal recycling gain	Measure MICH signal w/ and w/out SRM
ITM suspension fiber violin mode Qs	For comparison/input to thermal noise models; fundamental + harmonics, if/as possible
HSTS/HLTS violin mode Qs (select)	
Magnetic field coupling to ITMs	Using B-field injections; direct longitudinal readout w/ MICH
Mode matching to the PRC	Should be >85%
Mode matching to the OMC	Should be >85%
Calibrated length fluctuation spectra (open loop) for PRCL, MICH, SRCL	To compare with SEI+SUS model predictions & ISC model environmental inputs
Calibrated alignment fluctuation spectra (open loop) for PRCL, MICH	
LSC sensing matrix	See T1200289 & T1300328 for model predictions
ASC sensing matrix	See T1300155 for model predictions
Michelson noise spectra w/ budget	See T1300507 for model
TCS: Precision and accuracy of the Hartmann sensors	See T1300495 for details of measurements
TCS: Spatial profile of induced thermal distortions	
TCS: Coupling to MICH	