*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.

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| 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 |