

## LIGO-M030008-00-M

X-Sender: sanders@acrux.ligo.caltech.edu  
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To: excomm@ligo.caltech.edu  
From: "Gary H. Sanders" <sanders@ligo.caltech.edu>  
Subject: **The S2 Interferometer Configuration Freeze**  
Cc: dcc@ligo.caltech.edu  
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In order to assure stability in entering into a science run, to facilitate operator expertise, integration of the Lab and LSC shift presence and awareness of the interferometer state, and to balance commissioning progress with consolidation of the performance gains into a stable, scientifically useful instrument set, we have followed the practice of freezing the interferometer configurations at a significantly earlier date than the scheduled start of the planned run. Between the freeze and the initiation of the run, we expect that the interferometer operations will focus on the transition from commissioning to stable operation in a scientific mode, with a progression from tuning and minor adjustments to addressing stability and operating the entire system including the data analysis system.

Since S1, very impressive gains have been made in the interferometer sensitivities, promising a successful S2 run. Similarly, the progress in data analysis capability has advanced, also positioning LIGO for this most important milestone in our field.

The interferometers are at slightly different stages of sensitivity and commissioning maturity. In order to optimize the possibility for S2 to include comparably sensitive coincidence data from each of the three interferometers, and to focus the very small group of expert commissioners on to the critical path tasks, we will place the interferometers into a frozen configuration on different dates. We also include the E9 run schedule in making this decision.

The interferometer hardware and software will be frozen for our 3 interferometers as follows:

H1 on 17 January  
L1 on 23 January  
H2 on 3 February

These dates recognize the varying readiness of the interferometers and the desire to focus the remaining commissioning efforts, while preserving sufficient time to bring each instrument into stable science running by 0800 Pacific time on 14 February, the beginning of the S2 run.

The freeze cannot be defined precisely but it should mean that:

- \* All installations of hardware and software should be planned so that they are completed and working by the time of the freeze.
- \* Broken things, both hardware and software, can be fixed.
- \* The DAQ channel configuration cannot be changed without S2/commissioning leadership approval.
- \* Commissioning can continue (e.g., tuning the filters in the LSC loops, characterizing the WFS sensors and tuning their feedback loops, etc), but any change to the operational state of the machine (e.g., a decision to use a revised filter, or to use WFS2) would require the approval of the S2/commissioning leadership.

For the management of the transition from commissioning to science running, Stan Whitcomb will serve as the S2/commissioning leader and will make the decisions on the proposed departures from the freeze as outlined above. Stan will consult as appropriate, with the observatory Heads (Fred and Mark), the commissioning leaders (Rai and Peter), and with the Lab Directorate. In addition, Keith Riles should be consulted in his role leading the LSC Detector Characterization group.

Barry and Gary

Gary H. Sanders  
LIGO Laboratory  
California Institute of Technology 18-34  
Pasadena, CA 91125

626-395-2997  
626-304-9834 fax