

LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY
- LIGO -
CALIFORNIA INSTITUTE OF TECHNOLOGY
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TEMPORARY OPERATIONAL SAFETY PROCEDURE (TOSP) FOR THE 700 mW Nd:YAG PSL			
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This is an internal working note
of the LIGO Project.

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1 PURPOSE

The 700 mW Nd:YAG laser has arrived and is now located in the most remote room of the LIGO Optics Lab; integrating it with a laser frequency prestabilization arrangement, yet to be designed and built, is an urgent task. This document outlines the essential safety measures to be observed during work on the PSL, which shall start with no delay.

2 SCOPE

This TOSP contains the bare essentials related to safety in the PSL lab; it is meant to serve as a stopgap procedure to allow work in the lab until a comprehensive laser safety plan is adopted by the LIGO Project.

3 AUTHORITY AND RESPONSIBILITY

The LIGO Detector Group Leader has the authority to initiate implementation and termination of this TOSP. Implementation responsibility rests with the laser users.

4 HAZARD ASSESSMENT

The 700 mW laser is class IV. The hazard addressed in this TOSP is potential exposure of the eyes to direct laser beams, which may cause permanent injury. The severity of this hazard is category II (Critical), according to the LIGO Project System Safety Management Plan, Section 3.3.2. The provisions of this TOSP reduce the probability of such an accident to level E (Improbable), and therefore the risk code is 2E. This risk level requires LIGO Project Manager review prior to operations.

5 HAZARD CONTROLS

5.1. Operational Safety

Any indication that the conditions of this TOSP have been violated for any reason requires an immediate termination of PSL operations.

5.2. Laser Operation Safety rules

1. The Detector Group Leader will approve a list of people authorized to operate the laser. The list will be revised and re-approved whenever necessary. Other people will be allowed to work with the laser only in the presence of at least one person on the authorized list.
2. For those working with the laser:
 - Wear protective glasses at all times when working in the room, except when the laser is off Or on STANDBY, AND the laser shutter is closed. Protective eyewear shall be of a type specifically designed for use with 1064 nm lasers.
 - Strictly avoid looking into the beam, even with protective glasses.

- All beams shall be blocked with beamstops or power meters. Particular care will be taken so that at no time will a laser beam hit the door.
 - Scattering of laser light shall be minimized by proper alignment of the optics and through use of screens and apertures.
 - IR viewing equipment will be available on the laser table, to make it possible to check for the presence of stray beams at any time.
3. Establish a low intensity flashing red light at the lab door (from the OTF), interlocked with the laser (laser on => flashing light on).
 4. Post a sign on that door, close to the door handle, saying that entering the lab is prohibited when the warning light is on, except when:
 - The person wishing to enter has donned the recommended protective eyewear **AND**
 - has announced to those working with the laser the intention to enter **AND**
 - has received approval to enter **AND**
 - has warned people working in the OTF that the door is about to be opened **AND**
 - everybody in the OTF have closed their eyes.
 5. On the entrance door to the lab, post the current list of approved laser operators and the current version of this TOSP.

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