Chapter 10: Laser Safety

Laser Pointer Requirements

1 Purpose

The purpose of these requirements is to prevent startle hazard, temporary flash-blindness, after images, glare responses, and permanent eye damage caused by unsafe use of laser pointers, which are hand-held battery-operated devices with a momentary on-off switch typically used as a pointing device during presentations. They cover classifying, selecting, labeling, and using laser pointers, both personal and SLAC owned. The requirements apply to anyone using a laser pointer at SLAC.

2 Requirements

2.1 Classification, Selection, and Labeling

Laser pointers have a maximum power output of 5 milliWatts (mW) and create a low-power visible laser beam, with wavelengths between 400 to 700 nanometer (nm). These lasers are either Class 2 (< 1 mW) or Class 3R (< 5 mW).

Note Class 3R lasers were formerly designated as Class 3a lasers and may be labeled this way.

- When choosing a laser pointer it is the best practice to pick a Class 2 laser. Most commercially available laser pointers, however, are Class 3R.

Warning Relatively inexpensive battery-operated hand-held laser “pointers” that are Class 3B (some Class 4) are now commercially available, which are well in excess of the 5 mW legal limit for laser pointers. These devices can be very dangerous. Use of all Class 3B and Class 4 lasers at SLAC must be approved by the laser safety officer (LSO); LSO approval for a Class 3B or Class 4 laser “pointer” would not be given.

Warning Some commercial green laser pointers have been observed to be missing the infrared (IR) filter, which results in dangerous emission of IR laser light that the user is unaware of. (The 532 nm laser pointers are not simple single wavelength diode lasers, but are a diode-pumped solid state laser. A doubling crystal is used to generate the 532 nm wavelength and then an IR filter must be used to block the 808 nm diode pump and the 1064 nm fundamental.)

- For a safety evaluation of a laser pointer or if you have questions on laser pointer safety, contact the LSO.
- Laser pointers must be labeled with either a CAUTION label for Class 2, or with a DANGER label for Class 3a or Class 3R.
2.2 Use

- Never point a laser pointer at a person. Permanent damage is possible if the beam is stared into, but there is also the possibility of startle hazard, temporary flash-blindness, after images, and glare response.
- Only point at inanimate objects.
- Laser pointers are not toys. Children should not be allowed to use them unless adequately supervised.

3 Forms

The following are forms required by these requirements:
- None

4 Recordkeeping

The following recordkeeping requirements apply for these requirements:
- None

5 References

[SLAC Environment, Safety, and Health Manual](SLAC-I-720-0A29Z-001)
- Chapter 10, “Laser Safety”