



The Astronomical League

A Federation of Astronomical Societies

Astro Note A2 – Laser Pointers

Introduction – The Astronomical League advocates the safe and responsible use of green laser pointers. Lasers are a valuable tool in astronomy for indicating astronomical targets in the night sky, but they can also cause potential harm. It is the responsibility of the owners and users of these lasers to ensure that they are used safely and responsibly.

Laser Safety Rules

1. A laser pointer must only be used in accordance with federal, state or municipal laws applicable to where it is used.
2. Laser pointers should be transported with batteries removed.
3. Laser pointers used for astronomy should have an activation button which turns to the off state automatically when not being used.
4. Before turning on a laser, users should check that no person, animal, motor vehicle, or aircraft is in the general vicinity of where the laser is being pointed.
5. When not being used to point out astronomical objects, lasers should be safely stored in a pocket or container or have a protective cap placed over the aperture.
6. Lasers should only be used by adults or under close adult supervision.
7. Lasers should always be safely stored away from children in a secure location.
8. When used at Star Parties, it is important to educate people that the lasers are tools of astronomy, are potentially dangerous, and are not toys.

Laser Use Guidelines and Recommendations

The most commonly used laser pointer in use by astronomers is the neodymium diode laser which emits a green beam at a wavelength of 532 nanometers. The more milliwatts the greater the potential eye hazard, no matter what the color of the beam. For astronomy, green is the most useful. The human eye sees green much better than the same amount of red or blue, so a 5-milliwatt green laser appears to be 5 to 10 times brighter than a 5-milliwatt red laser. Green also is easily scattered by dust and humidity so the path of the light becomes visible. Looking at a green beam in the sky should only minimally affect night vision. To keep your night vision, do not point the beam at objects that are not astronomical.

1. Laser pointers are valuable tools for outreach. For solo or small group use, for pointing out objects in the sky, a 5-milliwatt green laser is usually adequate. It is considered a class IIIa laser and is recommended for stargazing purposes. For a larger group, where the air is especially clean and dry, or where light pollution is an issue, slightly higher power, such as 10 to 25 milliwatts, will be better. The Astronomical League believes that astronomical observation does not need a laser over 50 milliwatts.
2. Never point a laser at an aircraft, no matter how distant. A U.S. law, signed by President Obama in February 2012, makes it illegal to knowingly aim a laser pointer beam at an aircraft or at the flight path of an aircraft. Be careful not to confuse a slow-moving, distant aircraft with a star. Don't point directly at an object unless you are sure it is an astronomical object.
3. Use sparingly—only long enough to point out an object. Once the object is identified, turn the laser off.
4. Star parties often have rules for laser use. Attendees should know and follow the policy at each event. Event organizers should have a policy as to where and when lasers may and may not be used.
5. Lasers will interfere with astrophotography. Constant-on lasers used for telescope pointing are not recommended for use at star parties and should be reserved for solo observing or avoided.