Derby and District Astronomical Society (DDAS)

Use of laser pointer policy

Introduction

When used safely, laser pointers are an extremely useful tool for guiding an audience around the night sky and to point out objects. They are also useful as aiming devices for telescopes and cameras. They are widely used during screen-based presentations to enhance audience participation.

DDAS requires all members wishing to user laser devices (including green laser pointers) at the Observatory, private events organised by DDAS and public events organised by or attended by DDAS (hereafter referred to as DDAS Events) to read and abide by this policy.

No specialist training is required for the use of a laser pointer however all DDAS member are required to abide by this policy at all times.

DDAS members also acknowledge that use of laser devices is undertaken at their own risk.

Summary

- Use only low power laser pointers designed for consumer use and which have been purchased from reputable sources.
- Use of laser pointers is restricted to persons over 18 years old.
- Do not leave a Laser pointer unattended where it may be picked up and used by a child or by a member of the public.
- Never point laser at another person, animal, building, vehicle, or aircraft.
- Be aware of surroundings at all times when using a laser pointer (especially if outdoors).

Risk overview

The word LASER is an acronym for Light Amplification by Stimulated Emission of Radiation, which describes the process by which lasers generate light (electromagnetic radiation).

There are many applications of the use of laser pointers but for DDAS these are limited to the use as a presentation aid or a pointer for astronomy observations.

The most common laser pointers emit red light (635 nm wavelength). Units emitting green light (523 nm) are also available and often used as pointers in astronomy.

When misused, laser pointers present serious risks of injury to the operator, other people, aircraft, and vehicles. Individuals who misuse laser pointers face prosecution and personal injury claims.

Due to the high portability, ready availability, and low cost of pointer lasers there is enormous potential for their misuse consequently there are strict controls regarding their permitted power output.

Conventional light sources such as torches emit light in all directions, and so the intensity of the light rapidly diminishes with distance from the source (the inverse square law). Laser light differs. It is monochromatic, coherent and is collimated meaning that the emitted light is concentrated at a single wavelength, the light waves remain in phase and are parallel, with very little divergence, so that the intensity is maintained over long distances. Therefore there is then a much greater capacity for laser beams to cause eye damage.

Note
The Laser Class Rating, the appropriate laser symbol and hazard warning statement should be clearly marked on the instrument. If the class of any laser pointer is not clearly identified, then it should not be used.

Permitted devices
All classes of laser device present a risk of personal injury if misused, including Class 2 (Class II) and Class 3a (Class IIIa) devices if an individual stares directly into the beam for an extended period or by deliberately overcoming the blink reflex.

Class 2 (Class II) devices present a minimal risk of personal injury in normal use , even if a person directly views the beam briefly by accident. DDAS members are therefore permitted to use Class 2 (Class II) laser pointers at DDAS Events.

Class 3a (Class IIIa) devices designed for consumer use present a minimal risk of personal injury in normal use, even if a person directly views the beam by accident. DDAS members are therefore permitted to use Class 3a (Class IIIa) laser pointers at DDAS Events. Note that collimated beam-type Class 3a (Class IIIa) devices with apertures greater than 7mm are not permitted at DDAS events as some types will present an eye hazard if the beam is viewed through telescopes or binoculars. These are not intended to be used as consumer laser pointers in any event.

If you have a Class 3a (Class IIIa) device, you must check its suitability with a committee member before using it at DDAS Events. Laser pointers used should not normally exceed Class 2 (Class II) and a power rating of 1 milliWatt (mW). At this power, any eye injury is normally avoided through the human aversion responses (blinking and turning away).

As a guiding principle, always use the lowest power laser pointer for any particular purpose.

Laser pointer purchases should be made from a reputable local supplier who can confirm that the laser has been tested according to UK standards rather than purchased from overseas or through the internet. Concerns have been raised regarding lasers purchased from overseas, or through the internet, where there can be a misclassification of the laser. It may be labelled as a low class but may in fact be a higher class when tested according to UK standards. There are many countries where the import/export of higher-powered laser pointers are not regulated.

Caution is advised because their low price and common availability overseas means that some higher-powered lasers do find their way into the UK.

Prohibited Devices

No classes of device other than Class 2 (Class II) or Class 3a (Class IIIa) devices designed for consumer use as laser pointers may be used at DDAS Events.

This prohibition includes devices which are not marked with a classification, devices where a member of the committee reasonably suspects the device is of a higher classification than marked and devices not intended for consumer use. This prohibition also includes devices which have been modified and those which have been salvaged or otherwise repurposed from their intended use.

Members should be aware that devices may be mis-labelled intentionally to evade import restrictions or due to inferior quality control during manufacture. This is particularly the case for laser pointers bought online or overseas.

Members are expected to abide by the safe usage requirements set out in this document due to the risk of devices being mis-labelled and thus more hazardous than expected.

Permitted Users

Only adult members (18+) of the society are permitted to use laser devices at DDAS Events. Members will be asked to read this document and confirm their willingness to abide by it upon joining the society. In serious or repeated cases of misuse, permission to use laser devices may be withdrawn permanently, or the member and the incident(s) may be reported to the police.

Specific Risk

DDAS events are attended by members of all ages and often involve or can impact upon the general public. Therefore, guidelines are presented further below for the use of laser pointers in meetings and at Outreach events.

DDAS events are sometimes conducted in an area surrounded by busy airspace which greatly increases the risk of inadvertently shining a laser pointer at an aircraft. Care must be taken when conducting events near East Midlands Airport, local flying clubs and within city limits. You should consider the location of any nearby airports and aerodromes which may be active after dark.

Both the Observatory and Outreach events are frequently overflown or within easy sight of aircraft taking off and landing at East Midlands Airport. Members and the public frequently mistake landing lights for low lying planets or the International Space Station, so an abundance of caution is required.

Outreach events are sometimes held within a popular “free flight” zone used by low flying light aircraft including night flying or with frequent overflights by low-flying Police and Air Ambulance helicopters at night. A number of busy flight paths also pass directly overhead.

Aiming the Laser Pointer Safely

- Look and listen for aircraft every time you use the laser pointer. Never aim the laser pointer within 45 degrees of any aircraft. If an aircraft is heard but not seen, wait until you have located it visually before using a laser pointer.
- Always hold the switched-off laser pointer with your outstretched arm above head height to minimise the risk of hitting a person with the beam.
- If presenting to a group, point the laser away from the group and any telescopes. Move to a different position to achieve this if necessary.
- Before switching on, look along your arm to see where you are aiming and check for any hazards, including people, windows, vehicles, and other aircraft.
- Switch on the laser pointer whilst close to the intended target. **Switch off before moving on to the next target or putting the laser pointer away. Do not sweep the laser across the sky** and do not become distracted by questions from others.
- Do not aim a laser pointer below 20 degrees above the horizon.
- Do not aim a laser pointer at a moving object such as the ISS or a satellite. Be sure that you have identified your target before pointing and do not do so if in any doubt. Slowly sweep the laser in a circle around the object rather than pointing at it.
- If using a laser pointer to aim a telescope or camera, look along the laser pointer to check where it is aiming before switching on. Switch off the laser pointer before looking through the telescope. Aim high and move the telescope downwards slowly to the target. Do not sweep the telescope horizontally at low elevations.

Other Do’s and Don’ts

- Store laser pointers securely where children cannot access them. Remove the batteries when not using the pointer.
- Use a laser pointer with a momentary switch whenever possible, i.e. one that switches off immediately the switch is released.
- Never point a laser beam at any person, animal, vehicle, or building.
- Never look directly into the laser beam or allow others to do so.
- Do not allow children to use laser pointers even if under the supervision of an adult.
- Do not use laser pointers as toys, including ‘sword fighting’ or other games.

- If you observe another member using a laser pointer inappropriately at a DDAS event, you should report it to the event organiser or a member of the committee immediately.

Public Events & Outreach

Whilst laser pointers are extremely useful at public events, extra care is required. All members attending public events are expected to set a good example and demonstrate the highest standards of behaviour, including the responsible use of laser pointers.

- Do not permit members of the public (adults or children) to use your laser pointer or one belonging to DDAS under any circumstances.
- Members of the public are not permitted to bring their own laser pointers or use them at DDAS events.
- If a member of the public is seen using a laser pointer, you must report it to the event organiser or a member of the committee immediately.
- If you observe another member using a laser pointer inappropriately at a public event, you should report it to the event organiser or a member of the committee immediately.
- Where a member of the public alleges that a member of DDAS or another member of the public is using a laser pointer inappropriately; you must report it to the event organiser or a member of the committee immediately.
- The event organiser or committee member will ensure that any unauthorised device is returned to the owner's vehicle or that the individual misusing a device is ejected from the event if necessary. Where reckless or criminal behaviour is seen, this should be reported to the police if appropriate.
- Do not leave laser pointer unattended. Keep them on your person at all times or locked securely in a vehicle or equipment box when not in use.
- Where a laser pointer is attached to a telescope or camera, do not leave it unattended unless you have removed the batteries.
- Children will find green lasers particularly exciting. Do not allow a child to put their hand in the laser beam and impress upon them (and their parent/responsible Adult) that it is not a toy.
- You may be asked where to obtain a laser pointer by a member of the public. Do not provide such information and state because of safety concerns you cannot engage in further discussion on the matter.

Laser Devices & The Law

Laser Misuse Act

The Laser Misuse (Vehicles) Act 2018 came into force on 10th May 2018, and makes it an offence for a person to shine a laser beam at a "mechanically propelled vehicle" which is moving or ready to move where the laser beam dazzles or distracts the person in control of the vehicle or is likely to do so. A vehicle may be an aircraft, a road vehicle, a train, a ship, a hovercraft, etc. It is also an offence to shine a laser beam at an air traffic facility, which may be a building or other structure used for air traffic services.

On conviction of an offence under the act, the person may be liable to imprisonment, an unlimited fine or both. It is a defence to show that the person did not intend to shine the laser beam at the vehicle or facility and exercised all due diligence and took all reasonable precautions to avoid doing so.

If you abide by the requirements of this policy, you may be better placed to demonstrate that you did exercise due diligence and took all reasonable precautions.

Personal Injury Law
The basic principle of personal injury law is that you should take all reasonable precautions to avoid causing foreseeable injury or harm to others. If you are found to have acted in a negligent manner, you may be liable to pay damages (compensation) to the injured party.

If you abide by the requirements of this policy, you may be better placed to demonstrate that you did exercise due diligence and took all reasonable precautions.

Criminal Law
If you deliberately or recklessly cause harm to others using a laser device, you may be subject to prosecution under criminal law.

If you abide by the requirements of this policy, you will be better placed to demonstrate that you did exercise due diligence, took all reasonable precautions, and did not behave in a criminal or reckless manner.

Version Control:

Version 1 First draft June 2025.

Version 2 Summary added to first page July 2025.

This Version 3 adopted by Committee 17 September 2025.