



Dobsonian Telescope for Messier Object Hunting

A. Stone-Martinez, J. Galjanic, E. Gregory, Amateur Astronomy Club Research Team

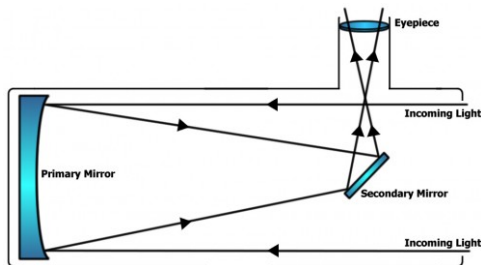


Abstract

The ERAU Amateur Astronomy Club Research Team is designing and building an amateur research telescope. The primary goal is high portability and compactness, with no compromise of optical quality. The team began with a set of mirrors pre-owned by the Amateur Astronomy Club, and will be constructing the telescope frame from medium density particle board. In the traditional style of John Dobson, the secondary mirror will be mounted on a truss system. This will reduce the weight and size of the telescope during transportation, as it can be disassembled and transported in a very small area. The primary purpose of the telescope is to observe and catalog messier objects in the night sky. After completion of the Messier Catalog, it shall be presented before physics faculty of ERAU.

Background

A Dobsonian Reflecting Telescope functions through use of a parabolic primary mirror. As light travels down the barrel of the telescope, it is reflected off the primary mirror into a secondary. This secondary mirror then reflects the light into the eyepiece of the telescope. The tube is supported by a Dobsonian mount, which rotates the tube about its own center of mass. The name Dobsonian is drawn from John Dobson, the inventor of this form of mount.



<http://www.markthompsonastronomy.com/wp-content/uploads/reflector-e1298072570991.jpg>

Objectives

- Design and construct a functioning, portable Dobsonian Reflecting Telescope
- Use the telescope to complete a survey of all 110 Messier Objects in the night sky
- Further use the telescope for public outreach by the Embry-Riddle Amateur Astronomy Club

Design

Our design focuses on compactness and portability, allowing the users to easily store it in the back of a car and carry it to an observing location. It has an 8 inch mirror and a total focal length of 1200mm. The basic design is known as a truss tube assembly, where instead of a solid tube, the telescope's secondary mirror rests at the ends of four poles. This allows disassembly of the scope for transport. This is a popular design among amateurs, as shown by the image below, on the left. Once complete, our telescope will appear similar to this design, as demonstrated by the CAD Design on the right.



Deep Space 3 Telescope
<http://user.xmission.com/~alanne/DS3/DS3Main.html>



CAD model by John Galjanic

Acknowledgements

- Embry-Riddle Amateur Astronomy Club
- Embry-Riddle Physical Sciences Department
- Ignite Spark-Funds