

Physics Challenges for Teachers and Students

A Worldwide Problem-Solving Contest



► The Star and the Imagemaker (M3)

The image of a star is formed by a spherical mirror that lies on a horizontal surface. The star is directly above the mirror. The image is formed a distance b from the mirror. The mirror is then filled with a transparent liquid with the index of refraction n . Find the new location of the image. Assume that the diameter of the mirror is much less than its radius of curvature.

DOI: 10.1119/1.1903825

Submission Guidelines:

The deadline for submitting solutions to this problem is May 30, 2005.

- only email submissions will be considered;
- email your solutions to Boris Korsunsky at korsunbo@post.harvard.edu;
- please email the solutions as Word files;
- please email *each solution* as a separate file;
- note that each problem, in addition to a very clever title, has a code such as M1. Please name each file as “problem code-first initial-last name.” For instance, “M1DVader” if your name is Darth Vader and you are sending the solution to problem M1;
- please state your name, hometown, and professional affiliation in each file.

We look forward to your (and your students’) participation.

Please send correspondence to:

Boris Korsunsky
korsunbo@post.harvard.edu

The next *Challenges* problem will be posted online May 23.