

Exercise 1.2

Curved Guides and Bender

1.2a

- Create a curved guide
- How does increasing m value affect the guide's behaviour?

1.2b

- Replace the curved guide with a bender
- Experiment again with the m value
- Compare results with those from curved guide

1.2c

- Replace the curved guide with three straight guides, rotated accordingly to imitate curvature
- Compare to results from curved guide, and pay attention to diverge distributions

Exercises 1.3 and 1.4

Ballistic and Elliptic Guide

1.3a

- Create a ballistic guide using 3 straight guide pieces
- Notice its divergence and intensity distributions
- Increase m value and observe the differences again in intensity and divergence distributions

1.3b

- Replace the ballistic guide with a straight one
- Compare intensity and divergence $1.5m$ after the guide with that of the ballistic case

Exercise 1.4

Elliptic Guide

1.4

- Replace the ballistic guide with an elliptic one
- Experiment again with different coatings m
- Compare to ballistic and straight cases
- The intensity profile (shape) is of particular interest. Notice the elliptic guide's focusing ability when compared to the previous guides. Compare full beam intensity profile 1.5m from the guide and also within a $2 \times 2 \text{cm}^2$ area at the same distance.
- Shrink the source to a 2cm diameter and compare performance of elliptic and ballistic guides again