

Exercise: Focusing a laser beam

There are many times you would like to focus a laser beam to as small a spot as possible. However, diffraction limits this.



The circular aperture of a laser ($\lambda = 780 \text{ nm}$) has $D_{\text{laser}} = 5 \text{ mm}$.
What is the spot-size d of the beam
after passing through a perfect lens with focal length $f = 5 \text{ mm}$
and diameter $D_{\text{lens}} = 6 \text{ mm}$?