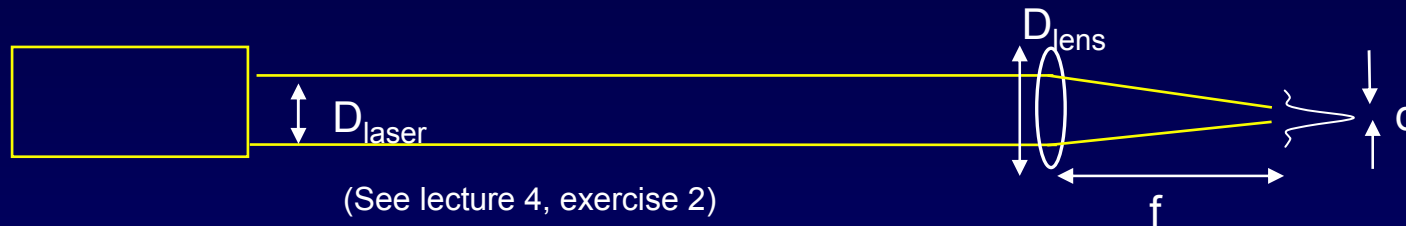


Solution

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



$\lambda = 780 \text{ nm}$, $D_{\text{laser}} = 5 \text{ mm}$, $f = 5 \text{ mm}$, $D_{\text{lens}} = 6 \text{ mm}$.

Which of the following will reduce the spot size?

- a. increase λ **b. decrease λ** c. increase D_{lens} d. decrease D_{lens}

The diffraction is already limited by D_{laser} . Increasing D_{lens} doesn't help.

There is a huge industry devoted to developing cheap blue diode lasers ($\lambda \sim 400 \text{ nm}$) for just this purpose, i.e., to increase DVD capacity.

“Blue-Ray” technology!