SURP Week 5

Continued Parameter Calculation

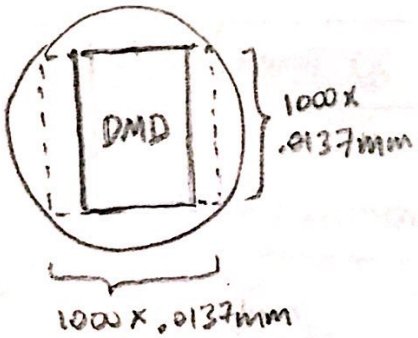
Collimator

Collimator input is direct output from DMD after relay optics, so

$$F/\#_{col} = F/\#_{relay} = \boxed{4.53}$$

$$f_{col} = F/\#_{col}\, D_{col}$$ Need to know lens size

Using DMD size to estimate minimum lens size



$$D_{col} = \sqrt{2(13.7)^2}$$

$$f_{col} = F/\#_{col}\, D_{col}$$

$$= (4.53)\left(\sqrt{2(13.7)^2}\right)$$

$$= \boxed{87.71\,mm}$$

Magnification of Spectograph

The magnification can be found using the ratio between sensor and DMD height

$$M_{spec} = \frac{Y_{sensor}}{Y_{DMD}} = \frac{(.0137)(1000)}{(.006)(2000)} = \boxed{.88}$$