

Name:
Group: GM, DM

School year:
Date of measurement:

Report

Topic: Eye optics. Characteristics and parameters of the lens.

Exercise I:

- a) Determine visual acuity of the right and left eye with the help of Snellen optotypes (the distance 5m).

- b) Determine the size of the letters (drawn into the squares of the different size) which is possible to read at the viewing angle 5' from the distance 4, 5, 10 m.

Devices and implements used:

Snellen optotypes, set of the lens with different optical powers.

Procedure: according to the instructions.

Measured values and calculations:

a) $V = \frac{d}{D}$ for the right eye $V_R =$

for the left eye $V_L =$

b) $H_4 =$

$H_5 =$

$H_{10} =$

Exercise II:

Observe the couple of the plain photographs using the stereoscope.

Procedure: according to the instructions.

- Exercise III:**
- a) Evaluate the focal length of the converging lens using the object and image distance.
 - b) Specify the linear magnification of the converging lens.

Devices and implements used:

Optical bench, lamp, converging lens, focusing screen, ruler.

Procedure: according to the instructions.

Measured values and calculations:

n	x_i [cm]	x'_i [cm]	y'_i [cm]	$f'_i = \frac{x_i \cdot x'_i}{x_i + x'_i}$ [cm]	$\bar{f}' - f'_i$ [cm]	$(\bar{f}' - f'_i)^2$ [cm]	$m_i = \frac{y'_i}{y_i}$	$m_i = \frac{x'_i}{x_i}$
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

$$y = 1.05 \text{ cm} \qquad \bar{f}' = \frac{\sum_{i=1}^n f'_i}{n} \qquad \text{[cm]}, \qquad n = 10$$

$$\sigma_f = \sqrt{\frac{\sum_{i=1}^n (\bar{f}' - f'_i)^2}{n(n-1)}} = \qquad \text{[cm]},$$

$$f' = (\bar{f}' \pm \sigma_f) = \qquad \text{[cm]}$$

$$\mu = \frac{\sigma_f}{\bar{f}'} \cdot 100 = \qquad \text{[%]}$$

$$\varphi = \frac{1}{\bar{f}' \text{ [m]}} = \qquad \text{[m}^{-1}\text{]} = \qquad \text{[D]}$$

Conclusions, commentary: