

NAME, GROUP:

DATE:

working with:

## OPTICS 2

### 1. Determining the wavelength of a laser diode using a metal ruler as a reflective diffraction grating

Distance between the screen and the laser spot on the metal ruler  $L = \dots\dots\dots$

### 2. Determining the grating constant of a transmission grating

Distance between the screen and transmission grating  $L = \dots\dots\dots$

### 3. Determining the width of a hair by diffraction

Distance between the screen and transmission grating  $L = \dots\dots\dots$

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### 4. Michelson interferometer

#### Determining the temperature coefficient of a heated ceramic tube

Resistance of the Pt resistance thermometer

before heating:  $R_1 = \dots\dots\dots$

after heating:  $R_2 = \dots\dots\dots$

$\Delta R = R_2 - R_1 = \dots\dots\dots$

Temperature difference:

$\Delta T = \Delta R / (R_0 \cdot \alpha_{Pt}) = \Delta R / 3.92 = \dots\dots\dots$

Length of the ceramic tube  $l_0 = \dots\dots\dots$

Number of the cycles while heating  $N = \dots\dots\dots$

Elongation of the ceramic tube

$\Delta l = (N/2) \cdot \lambda = \dots\dots\dots$

$\lambda = 650 \text{ nm}$

Temperature coefficient

$\Delta l = l_0 \alpha \Delta T \rightarrow \alpha = \dots\dots\dots$