



BIRZEIT UNIVERSITY
Physics Department

Physics 111

Experiment No. 6

Index of Refraction

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Student's Name: _____ Student's No.: _____

Partner's Name: _____ Partners' No. : _____

Instructor: _____ Section No.: _____

Date: _____

– **Abstract:**

1) The aim of the experiment:

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2) The method used:

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3) The main results are:

$$\mu = \pm$$

– **Theory:**

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– Procedure:

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– Data:

NO.	Angle (i) degree		i average	Sin (\bar{i})	Angle (r) degree		r average	Sin (\bar{r})
	i ₁	i ₂			r ₁	r ₂		
1								
2								
3								
4								
5								
6								

– **Calculations:** (Using Least Square Fit method)

Let $x = \sin(\bar{r})$, $y = \sin(\bar{i})$

x_i	y_i	$x_i y_i$	x_i^2	$y_i - mx_i - b$	$(y_i - mx_i - b)^2$
$\sum x_i =$	$\sum y_i =$	$\sum x_i y_i =$	$\sum x_i^2 =$		$\sum (y_i - mx_i - b)^2 =$

$$D = N \sum x_i^2 - (\sum x_i)^2 = \underline{\hspace{10cm}}$$

$$m = (N \sum x_i y_i - \sum x_i \sum y_i) / D = \underline{\hspace{10cm}}$$

$$b = (\sum x_i^2 \sum y_i - \sum x_i \sum x_i y_i) / D = \underline{\hspace{10cm}}$$

Calculation of errors:

$$\sigma_y^2 = \frac{1}{N-2} \sum (y_i - mx_i - b)^2 = \underline{\hspace{10cm}}$$

$$\Delta\mu = \sigma_m = \sqrt{\frac{N\sigma_y^2}{D}} = \underline{\hspace{10cm}}$$

$$\Delta b = \sigma_b = \sigma_y \sqrt{\frac{\sum x_i^2}{D}} = \underline{\hspace{10cm}}$$

– Results and conclusion:

$$\mu = \quad \pm$$

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