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**ETRX-D-2**

**Experiment Polarization**

**Aim:**

To study polarization of light using He-Ne Laser

**Theory:**

The intensity of plane polarized light will be maximum when the polarization axis of the analyser coincides with that of the polarizer and minimum when the two axes are crossed. For any other position of the axis of the analyser θ with respect to the axis of the polarizer, the output intensity (I) will follow the following relation:

I=Imcos2θ

Where the maximum intensity Im corresponds to the case where the abovementioned two axes matched.

**Procedure:**

1. Enter the value of angle of Polarization in the box given blow Polariser. 2. Enter the value of angle of Analyser in the box given blow Analyser. 3. Note the value of Ratio of output intensity to input intensity of the Laser light. 4. Enter the value of angle of Analyser, angle of Polariser and ratio of output to input intensity.

5. Repeat the observation to complete the observation table.

6. Click the “Plot Graph” button.

7. Calculate the slope of the graph.

**Observation:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S.**  **No** | **Angle of Polarizer ɸ**  **(degrees)** | **Angle of Analyser ɸº**  **(degrees)** | **Angle between axes of polarizer and**  **analyser**  **ɸ - ɸº**  **(degrees)** | **cos**�� | **cos2**�� | **I/I (0)** |
| **1.** | 10 | 10 | 0 | 1 | 1 | 1 |
| **2.** | 20 | 10 | 10 | 0.984 | 0.969 | 0.704 |
| **3.** | 30 | 10 | 20 | 0.939 | 0.883 | 0.166 |
| **4.** | 40 | 10 | 30 | 0.866 | 0.750 | 0.023 |
| **5.** | 50 | 10 | 40 | 0.766 | 0.586 | 0.444 |

**Graph:**

**Simulator**

