



Review: Wave optics

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14. Invent yourself: Wave optics

Invent yourself task:

Formulate an open, thought-provoking problem that concerns a phenomenon of wave optics.

Statement:

Use some wave optical phenomenon to measure the refractive index of a transparent material.

Task was fully fulfilled.



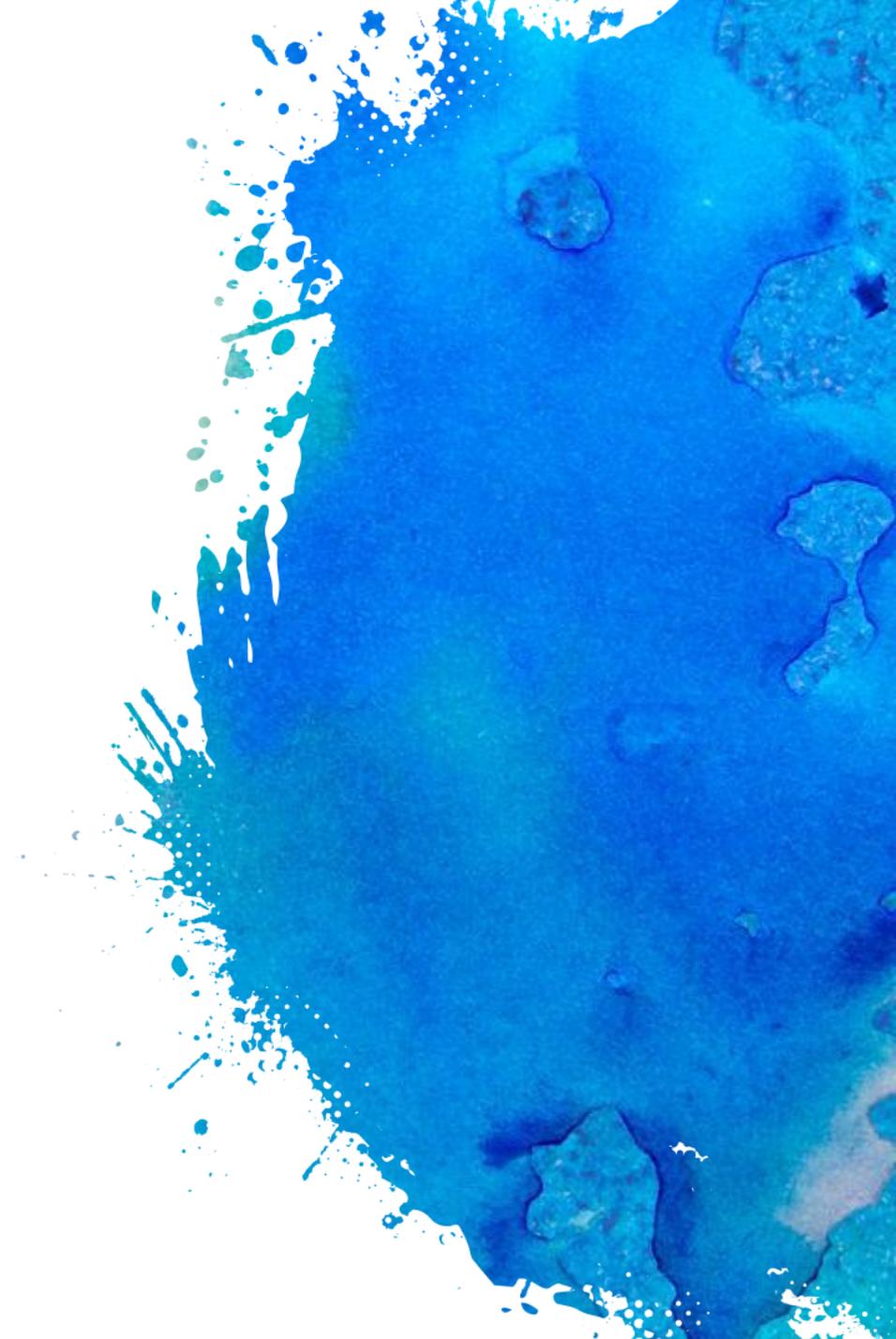
Overview

- Theory
- Experiment
- Results
- Agreement between theory and experiment
- Conclusions

Green = very good

Yellow = average

Red = needs improvement



Reporter



1. Proper and deep theory, starting from basic explanation and deriving the equations needed
2. Accurate experimental setup and procedure, taking a lot of measurements
3. Showed correlation between theory and experiment
4. Derives error, gets pretty accurate results
5. Includes graphs and images



1. Not perfect collection of data, the fringes are not absolutely clear
2. Doesn't take into account the inhomogeneities of the glass plate
3. Small vibrations and particles in the air could have large effects on the experiment
4. Didn't make clear why she changed the coefficient b
5. No exact explanation of the difference between geometrical and optical path
6. Improvement suggestion: varying the wavelength and refractive index

Opponent



1. Mentions and asks interesting questions about varying the parameters
2. Questions the transparent medium and why was exactly glass used



1. Doesn't ask why she changes the theoretical model (b)
2. Doesn't address possible issues with the experiment (small vibrations, air particles)
3. Targets minor problems irrelevant to the report and problem (both in the statement and the questions)
4. Doesn't understand the studied phenomena (study solid)

Discussion



1. Reporter addressed varying parameters and explained why they didn't vary them (wavelength)
2. Mentioned the present human errors
3. Reporter answers all the questions properly and in detail



1. Opponent asks for using equipment not needed for solving the stated problem and task
2. Opponent doesn't show the visuals to the whole room
3. Asks irrelevant question (white light)
4. Opponent let the reporter lead the discussion

Clashes

- Q: Why not handheld refractometer

Opp: Would be easier to measure

Rep: Would simplify the problem too much and won't be thought provoking

Rev: Agree with reporter

Clashes

- Q: Why not use white light

Opp: Would make the problem more interesting

Rep: Would not create a proper interference pattern

Rev: Agree with reporter

Thank you for your Attention