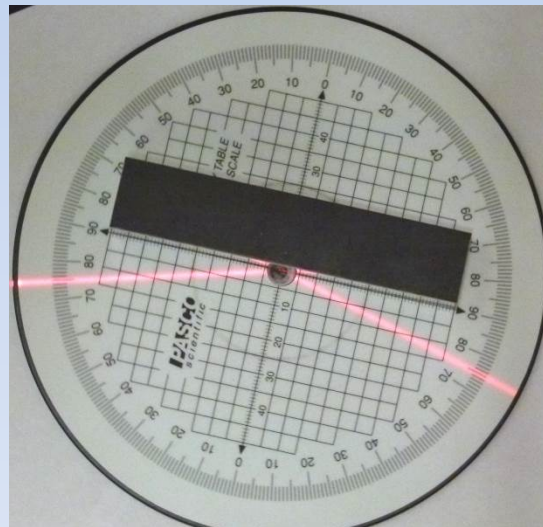


Laws of Reflection and Snell's Law revisited by Video Modeling



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Teaching of Optics



**Formal math
approach**

**Experiments in
Laboratory**

**How can we make experiments
MORE interactive?**



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Interactive teaching of optics

- ❖ **Students participate in discussions about experiments and experimental results.**
- ❖ **Discussions can occur in classroom, and out of classroom.**
- ❖ **Experiments should not be limited to the laboratory.**



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VIDEO BASED EXPERIMENTAL ACTIVITIES (VBEA)

Examples in basic optics:

- ❖ **Laws of reflection.**
- ❖ **Snell's law.**



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VIDEO BASED EXPERIMENTAL ACTIVITIES (VBEA)

Laws of reflection:

1. The **incident** and **reflected** rays, and the mirror **normal axis** are within the same plane (video 1 and video 2)
2. The angle of incidence **equals** the angle of reflection (video 3)



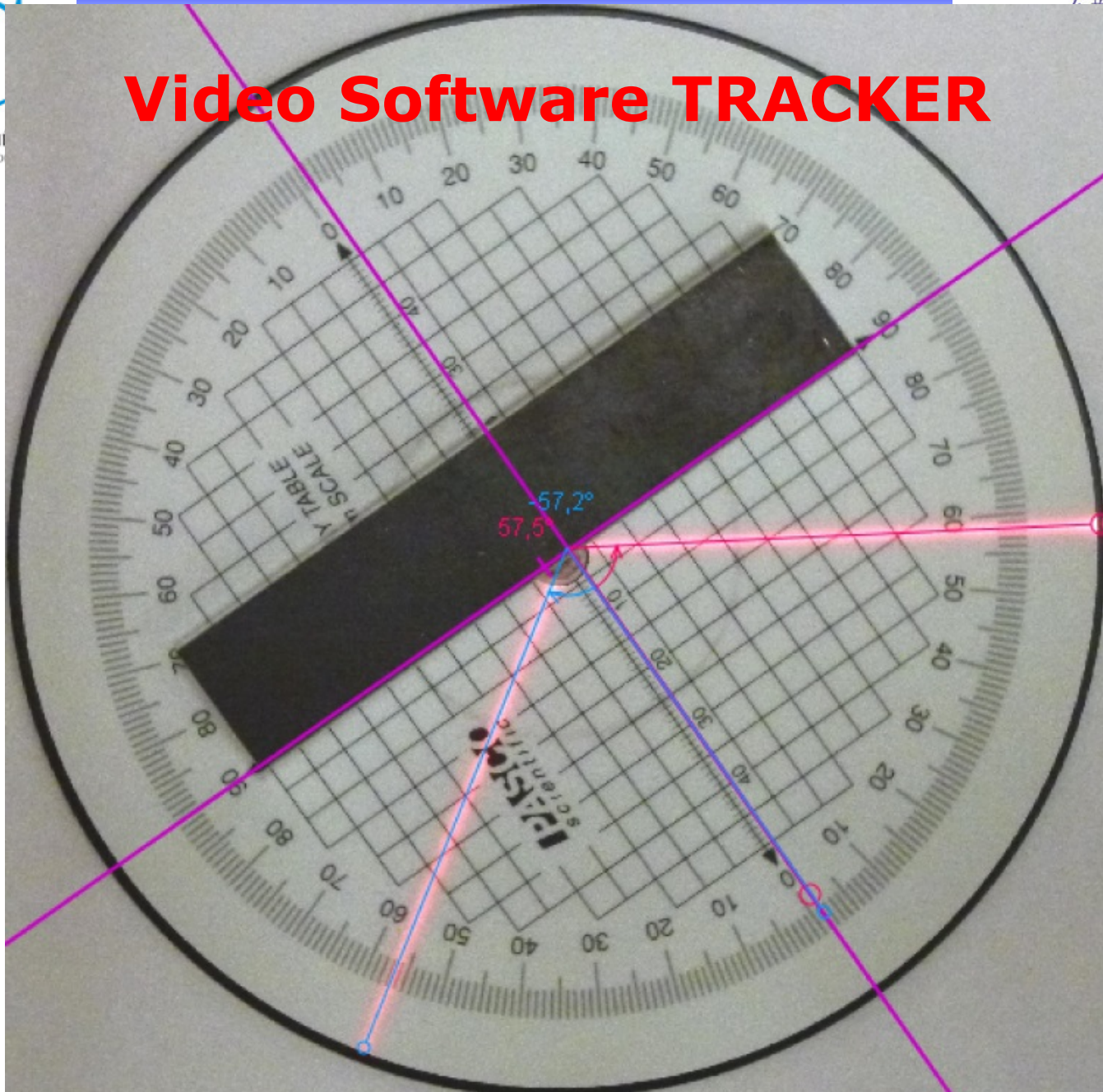
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Video Software TRACKER





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VIDEO BASED EXPERIMENTAL ACTIVITIES (VBEA)

Snell's law:

$$n_1 \sin \theta_1 = n_2 \sin \theta_2$$

Video 4: air to glass

Video 5: glass to air



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Conclusions

- ❖ **Optics can be taught out of the laboratory**
- ❖ **VBEA promote interactive teaching**
- ❖ **Video modeling is a powerful tool for teaching and learning physics**

Thank you !

