Refractive Index Tests

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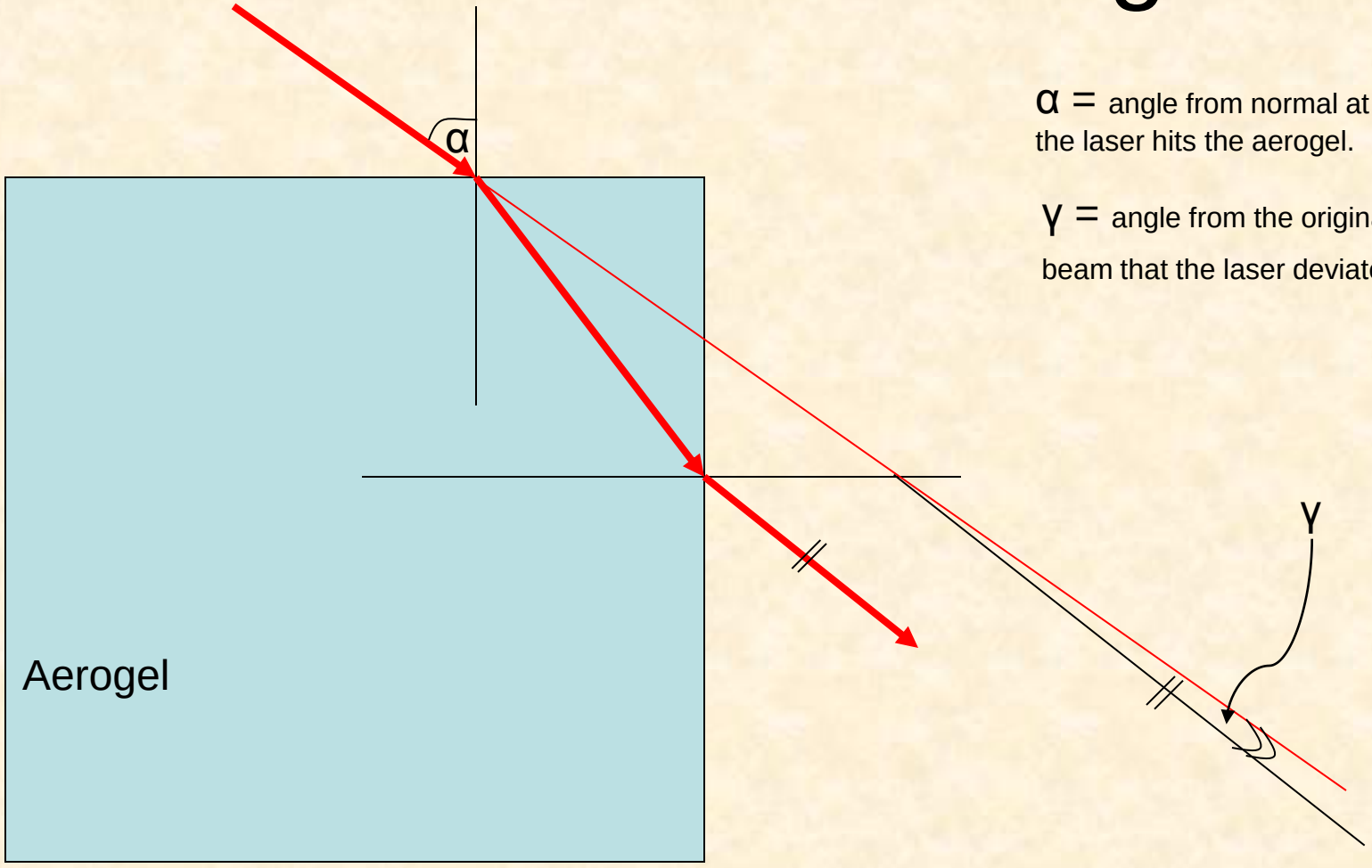
Method of Testing



α = angle from normal at which the laser hits the aerogel.

γ = angle from the original beam that the laser deviated.

Results

- For this method;

$$\gamma = \arcsin(n \cdot \cos(\arcsin((1/n) \cdot \sin(\alpha)))) + \alpha - (\pi/2)$$

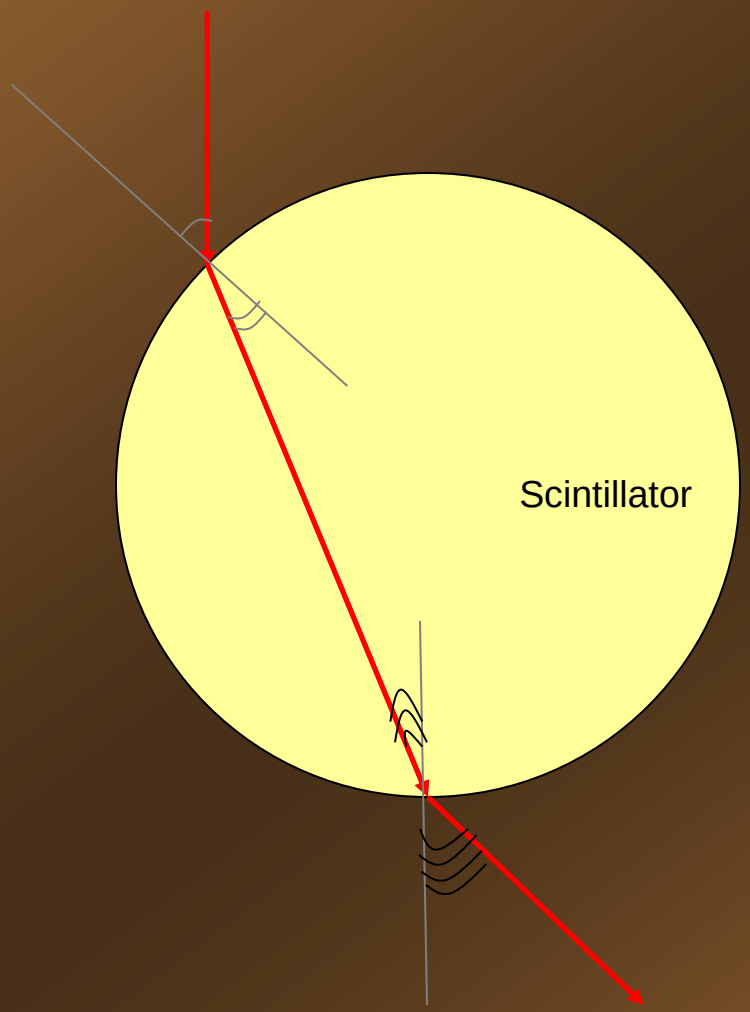
where n is the refractive index of the aerogel

$$n = (\sin(\alpha)^2 + \cos(\gamma - \alpha)^2)^{1/2}$$

What's next?

- Working to improve the set-up for refractive index tests.
- Using water (whose refractive index we know) to test the set-ups.
  - I learned that the plastic container being used to hold the water does have an impact on the tests (due to its own refractive index).

Another Method of Testing



Results

Multiple tests with this method have yielded a refractive index for the scintillator of about 1.5 +/- 0.1

Note: All of the angles have been directly measureable with paper, a pencil, and a ruler. Since one may not trace the aerogel, the methods still need refinement.