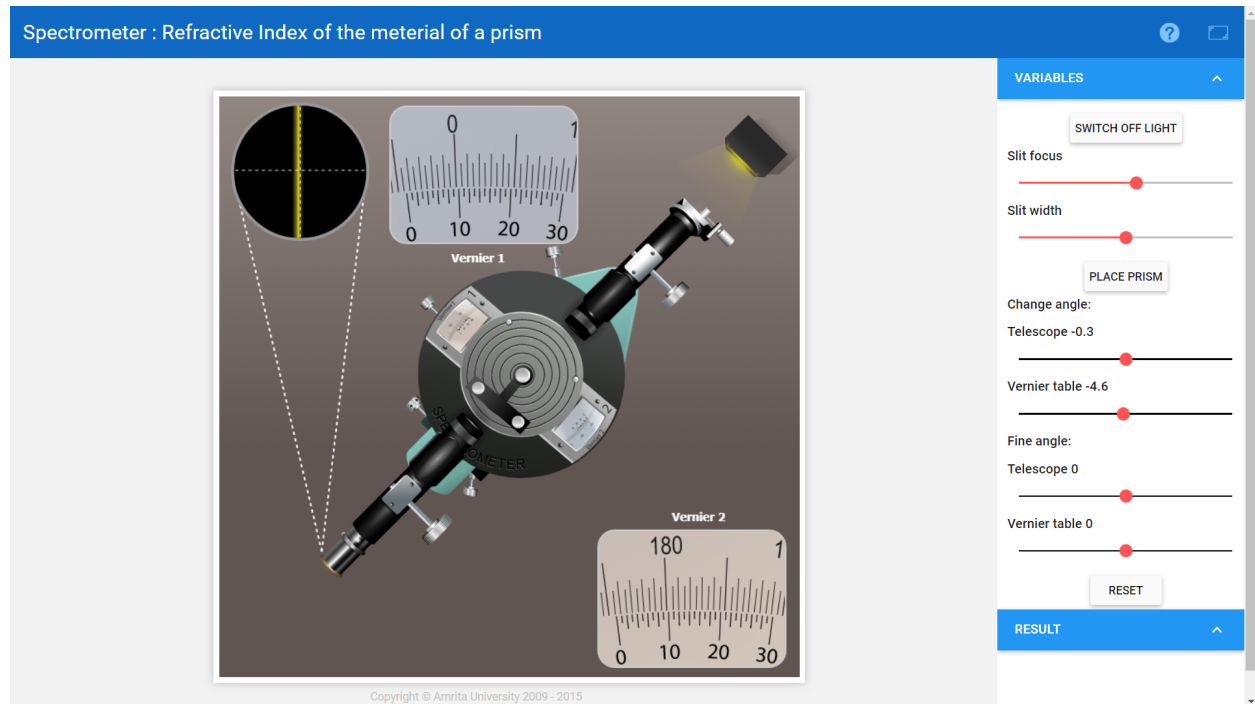


Observations and Calculations (IMT2019084 Shrey Tripathi)

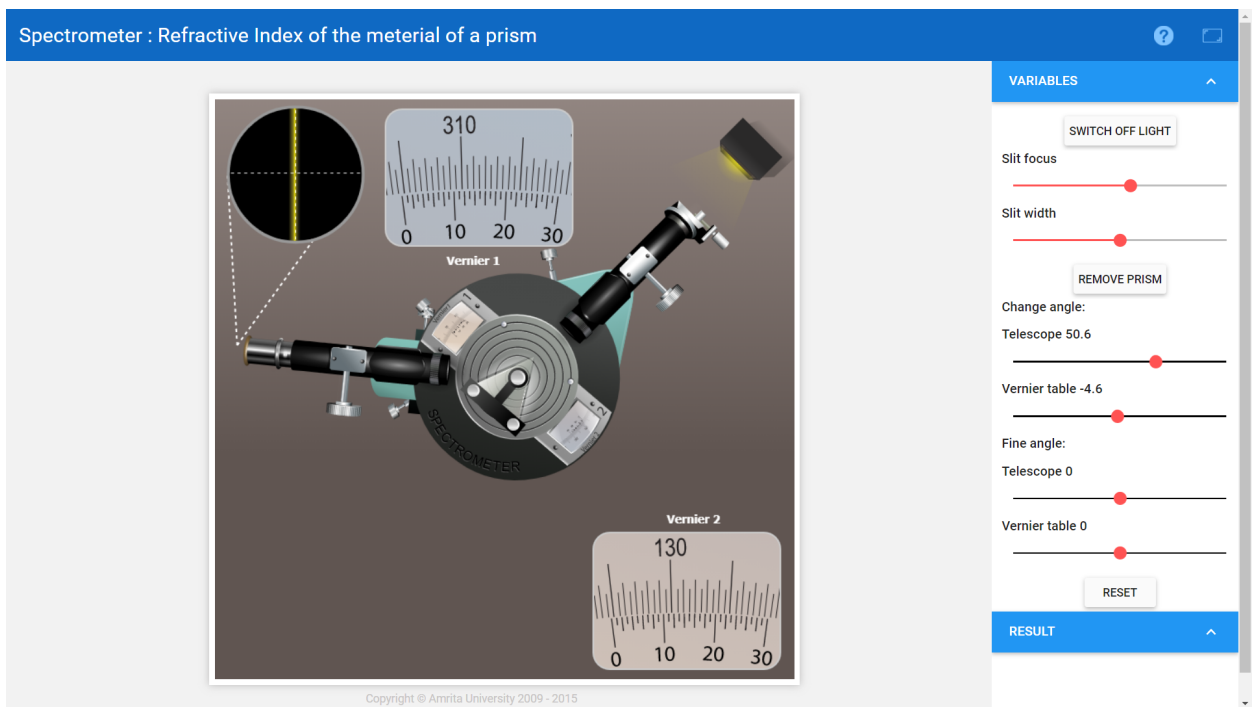
1. Preliminary Adjustments



One main scale division (N) = 30°
Number of divisions on vernier (v) = 20
Least Count (L.C.) = $N / V = 1.5^\circ$

2. Angle of Prism:

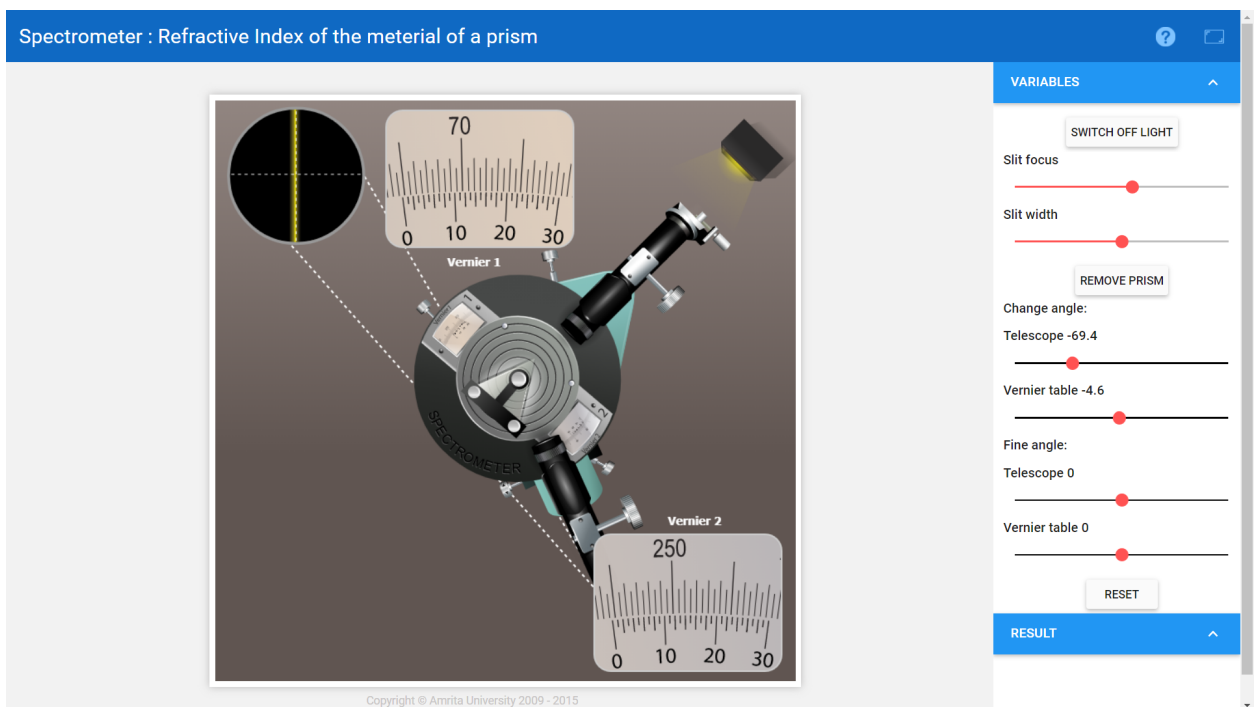
a. Face 1:



$$V_1 = 310^\circ 6'$$

$$V_2 = 130^\circ 6'$$

b. Face 2:

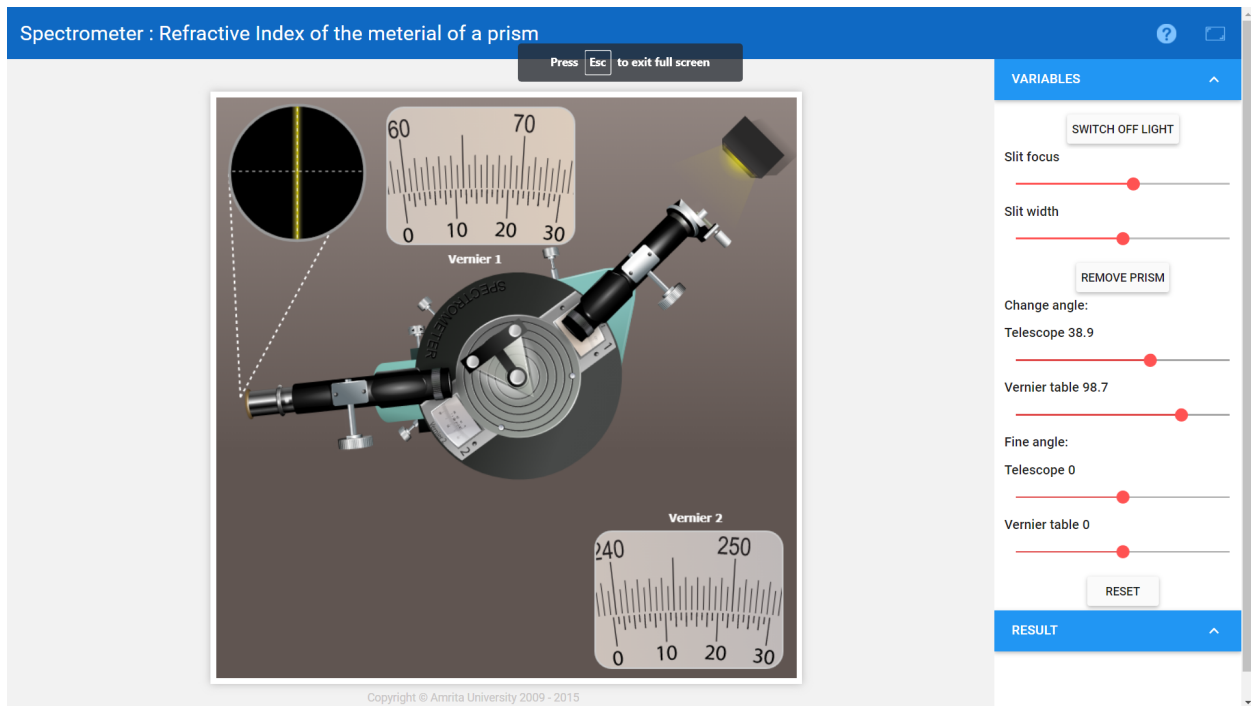


$$V_3 = 70^\circ 9'$$

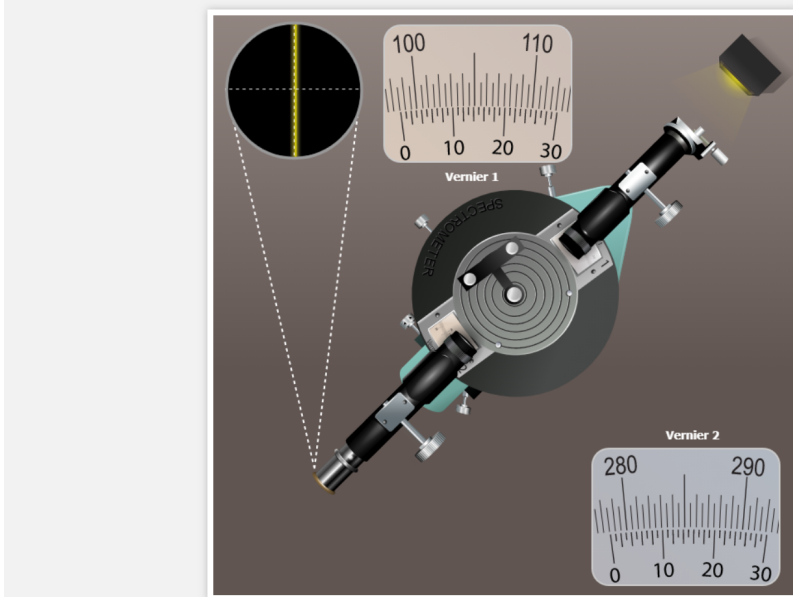
$$V_4 = 250^\circ 6'$$

$$\begin{aligned}\text{Angle of Prism, } A &= ((V_4 - V_2) / 2 + (V_3 - V_1 + 360^\circ) / 2) / 2 \\ &= ((250^\circ 6' - 130^\circ 6') / 2 + (360^\circ + 70^\circ 9' - 310^\circ 6') / 2) / 2 \\ &= (60^\circ + 60.02^\circ) / 2 \\ \mathbf{A} &= \mathbf{60.01^\circ}\end{aligned}$$

3. Angle of Minimum Deviation:



$$\text{Angle of Refraction } (\theta_1) = 60^\circ 9'$$



<https://lab.amrita.edu/index.php?sub=18&brch=2818&sim=1513&cnt=6>

© Amrita University 2009 - 2015

VARIABLES

SWITCH OFF LIGHT

Slit focus

Slit width

PLACE PRISM

Change angle:

Telescope 0.1

Vernier table 98.7

Fine angle:

Telescope 0

Vernier table 0

RESET

RESULT

Angle of Incidence (θ_2) = $100^\circ 9'$

$$\begin{aligned}\text{Hence, Angle of Deviation } (\delta) &= \theta_1 - \theta_2 \\ &= 60^\circ 9' - 100^\circ 9' \\ &= -40^\circ\end{aligned}$$

Taking absolute value, $\delta = 40^\circ$

4. Refractive Index:

$$\begin{aligned}\mu &= \sin(A/2 + \delta/2) / \sin(A/2) \\ &= \sin(30.005^\circ + 20^\circ) / \sin(30.005^\circ) \\ &= 0.766 / 0.5000 \\ &= 1.5317\end{aligned}$$

Hence, $\mu = 1.5317$