**Brief Report:**

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**1. Outline**

We choose topic 5, refraction/dispersion simulator tool. This topic asks us to create a refraction and dispersion simulator tool which users can choose different optical elements/interfaces, different types of glass, different incident light source, and different incident angles. With the change of each input, the incident rays and outcoming rays on the figure will change correspondingly as well. The critical angle is computed. There is an error alert if the input angle exceeds the critical angle. One of the most significant functions of our GUI is enabling that the rays will change accordingly with the change of the inputs.

**2. User guide**

This is a refraction/dispersion simulator.

You can choose different optical elements/interfaces. Options include Air/Glass surface, Glass/Air surface, Plane parallel plate, 60-degree prism, and simple positive lens. The elements on the figure will automatically change when you change the elements by drop-down menu.

Same for optical glass, you can choose the glass you want from the drop-down menu. The refractive index of the glass will change accordingly.

Same for incident light sources, you can pick any source you like from the drop-down menu and the figure will show the rays corresponding to the source you choose.

Same for incident angles. Here you have two different ways to input the incident angle. You can either directly enter the incident angle you want in the “starting ray angle” box or drag the slider handle. The value of the angle will be shown in angle box when you drag the handle.

The critical angle box shows the critical angle according to your inputs. Any incident angle that is larger than the critical angle will trigger the error alert of the simulator. Please enter the angle smaller or equal to the critical angle.

If you have any question, feel free to contact the designers.

**3. Example guide**