Polarizing Filters and Light
Stressed Out

To do and notice:
Holding two polarizing filters about 6 inches apart, rotate the filters until very little light makes it through the filters.
Place some of the plastic wrap between the filters. Slowly stretch the plastic wrap. What do you observe as the plastic wrap is stretched close to the tearing point? Place some of the other objects between the filters, one at a time. Notice how the color patterns seem to appear and disappear as you stretch or press the objects between the filters.

What's going on?
When two polarizing filters are placed one on top of the other, they can be transparent or opaque to light. By rotating one of the filters, the transmitted light passing through the filters may be turned 'on' or 'off'. When the filters do not transmit light, the polarizing filters are said to be 'crossed polarizing'. Certain materials such as cellophane tape, plastic wrap, CD plastics, plastic utensils and plastic bags exhibit beautiful colors when placed between two crossed polarizing filters. The different colors represent different thicknesses of the materials. Structural engineers and scientists use this method to discover stress areas in new structural designs.

LIGO Connection: Gravitational wave polarization is similar to polarization of light.