**MEASUREMENT OF THE INTENSITY VARIATIONS FOR POLARISATION**

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| **Specification reference:** | **AS Component** | **2.4 – The nature of waves** |
| | **A level Component** | **3.1 – The nature of waves** |

## Theory:

The light waves in a ray of light from a lamp have vibrations in all planes and directions. The light is unpolarised. When the light passes through a polaroid filter; the vibrations will be in one plane or direction only. In the experiment with two pieces of polaroid, the first polarises the light. The light will then not pass through the second polaroid if the direction in which the second filters polarises light is at right angles to the polarising direction of the first polaroid.

## Apparatus:

Two pieces of polaroid
Lamp e.g. 24 W, 12 V bulb in holder

## Further Guidance for Technicians:

Fluorescent lights from the room can be used instead of a lamp.

## Experimental method:

Investigate the variation in intensity by looking through the lamp through both polaroids and rotating one of the polaroids through $360^{o}$. Note the change in intensity that occurs.

## Extension

The polarisation of microwaves could be investigated using a 3 cm wave transmitter and receiver with two metal grilles used as polarising filters.

## Practical Techniques:

Generate and measure waves, using microphone and loudspeaker, or ripple tank, or vibration transducer, or microwave/radio wave source.