Light Speed: A Measure of Ocular Phototransduction Using Pulsed Light Emitting Diodes

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Researchers working with LIDAR systems reported observing distinct laser pulses propagating over a 100m range. It was hypothesized that these observations were due to the power of suggestion, as the beam propagation time is much faster than the eyes' response time. In a series of experiments, two LEDs were mounted adjacent to each other and were each pulsed at 100ns durations. The delay between each LED flash was varied from -100 to +100ms (right to left) and the observer was asked which LED flashed first or if they flashed simultaneously. In the series, four LEDs were oriented in a linear array with a separation of 125mm between lamps. The delay between the LEDs flashes was varied from -40 to +40ms so that the array simulated a laser pulse and the observer was asked to identify the direction of the propagating light. For the adjacent LEDs, the average minimal perceived delay between flashes was 20ms and for the linear array, the average minimal perceived delay was about 1ms with 50% accuracy. If the LED array was distributed over a 100m distance with a lamp delay time of 1ms, the perceived light velocity would be 200,000m/s. Although viewers of the linear array experiment had a much faster response time, the difference between the perceived light velocity and the speed of light, 300x10^6 m/s, is three orders of magnitude. This experiment supports the hypothesis that the researchers were influenced by suggestion or other unidentified phenomena. However, these observations were noted by many researchers who doubted the possibility visualizing light movement, further research is justified.

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