

Abstract Submitted
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A computer is any machine that quantifies natural phenomena in order to simulate abstract mathematical functions. There are two main paradigms for computers: analog and digital. Digital computers use step-wise properties of nature to simulate discrete mathematics. This is opposed to the earlier analog co TROY LONG, EDDIE HOLIK, None — A computer is a machine that quantifies natural phenomena to simulate mathematical functions. There are two paradigms for computers: analog and digital. Digital computers that use relative extremes to simulate discrete mathematics. Analog computers implement continuous natural properties to replicate continuous functions. Analog optical computing has the potential to transfer information rapidly, using atomic emissions as an optical transistor. Optical equipment was used in order to demonstrate one way light can be used to produce calculations. A laser was used to reflect a beam of light off a mirror mounted to a piezo-electric crystal element, creating a simple optical transistor. When a voltage is applied across a piezo element, it mechanically expands. By placing the piezo element under the mirror like a shim and applying different voltages, the normal line between the mirror and the beam shifted, causing the beam to repeatably reflect to different locations on a screen. Using a photo-detector, numerical values can be taken from the intensity of the light shining on the detector. The presentation will include the design process for creating the piezo-electric optical demonstrator, for the purpose of encouraging creative, critical thinking in new fields of computer development.

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None

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