

Abstract Submitted  
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**Testing the Constancy of the Velocity of Light** JINGSHOWN WU<sup>1</sup>, NTU, SHENQ-TSONG CHANG, ITRC, HEN-WAI TSAO, NTU, YEN-RU HUANG, SAN-LIANG LEE, NTUST, WEI-CHENG LIN, HO-LIN TSAY, DIN PING TSAI, ITRC — The constancy of the velocity of light, which is one of the most important postulates of modern physics, assumes that the speed of light is independent of the choice of observer regardless the relative motion between the light source and the observer. However, this postulate has never been directly experimentally tested. We present a measurement system which can directly test this postulate. This system consists of a transmitter and a distant receiver. The transmitter modulates the terrestrial 635 nm, 1550 nm lights and the starlights emitted from Capella, Betelgeuse, and Vega, which have large radial velocities with respect to the earth around the spring Equinox, into pulses simultaneously. These pulses are received by the distant receiver. We employ a terrestrial white light which travels along the exact path of the starlights to calibrate the system. We compare the arrival times of these pulses at the receiver, in which the startlight pulses have different degrees of delays with respect to the terrestrial pulses. The results indicate that the observed speeds of startlights are related to the radial velocities of the stars with respect to the earth.

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