Does the Color of an Astronomical Body Affect the Observation of Decreasing Intensity With the Transit Photometry Method?

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In our quest of whether there is life outside of our solar system, the focus has been on finding planets known as Super-Earths with Earth-like qualities suitable for life, but large enough for us to see. The purpose of this study is to see how the color of a Super-Earth affects the double-dip transit photometry method of detecting exoplanets. The procedure is to set up a star-planet system in a large four-foot black box with a color-changing and intensity-changing LED bulb to simulate the star. A Hot Jupiter (foam ball) is suspended from a rotating motor, orbiting close to the star, and a suspended Super-Earth (a bead) orbiting further from the star with three different colors (blue/green, red and yellow). Data was captured with a BH1750 light meter sensor connected to an Arduino Uno. Luminosity data was measured for each light color (red, yellow, orange, blue, and white) at high intensity with the motor running for the orbiting Hot Jupiter and pulley system for each color Super-Earth. The results of my experiment support my hypothesis that the color of the Super-Earth does affect the ability to detect it with the double-dip transit photometry method. The yellow Super-Earth was the easiest to detect and it was detected the most with the red star.

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