

Discovery of a Newly Forming Hierarchical Triple

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ABSTRACT

We report the discovery of an unusual, new hierarchical triple system in the local neighbourhood. We have been monitoring the emission of the main sequence star JL Chr, and on June 15, 2014, noted the appearance of a new line in the optical. We interpreted this as evidence of a newly forming protostar, gravitationally bound to JL Chr. Continued monitoring showed an anomalously rapid expansion in the radius of JL Chr after the appearance of the new line, so on July 22, 2014, we obtained additional observations at longer (ultrasonic, 1–10MHz) wavelengths. These observations clearly showed two components in the nucleus of the star-forming region, in a binary protostar system. We designate these components as TWIN (Two WithIn Nucleus) A and TWIN B, shown in Figure 1. By observing the accretion rate of material onto the two components, we project that they will reach zero age main sequence on or before February 24, 2015. Given the current trajectory of JL Chr, we conjecture that a recent close encounter with the nearby hypervelocity star PF Hop is responsible for triggering the formation of these new stars.

Subject headings: techniques: photometric — holy crap: it’s twins

1. Introduction



Fig. 1.—: The ultrasonic observations of the two newly-forming components of the hierarchical triple system. TWIN A is on the left, and TWIN B is on the right.