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Abstract Amongst the dwarf galaxies in the Local Group, IC10 is one of the most interesting galaxies, with strong star forming activity and the highest density of Wolf-Rayet stars [4,7]. In this study, we present a precise optical monitoring survey of IC10 using the Isaac Newton Telescope (INT) with the wide field camera (WFC). We performed observations at nine epochs spaced between three to four months apart between June 2015 and October 2017 [5]. We identified Long Period Variable stars (LPVs) and red supergiant stars (RSGs) to determine the star formation history and chemical evolution of IC10 [1,2].

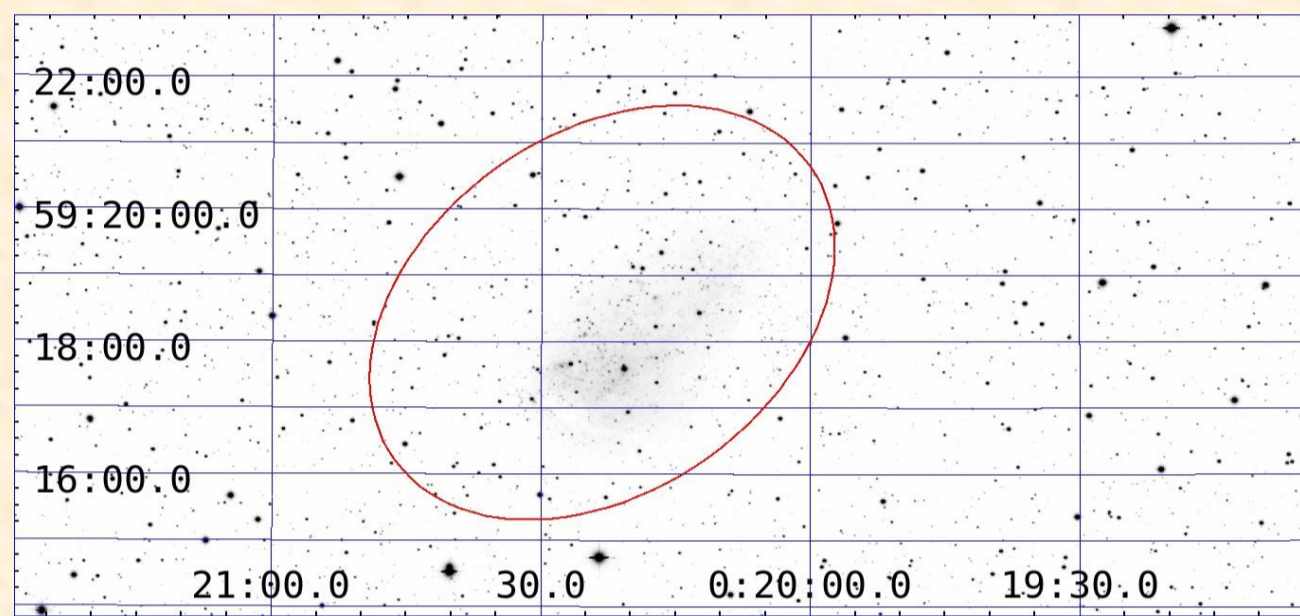


Fig. 1. Median i-band mosaic image of the IC10 dwarf galaxy. The red ellipse is marked as the half-light radius of the galaxy.

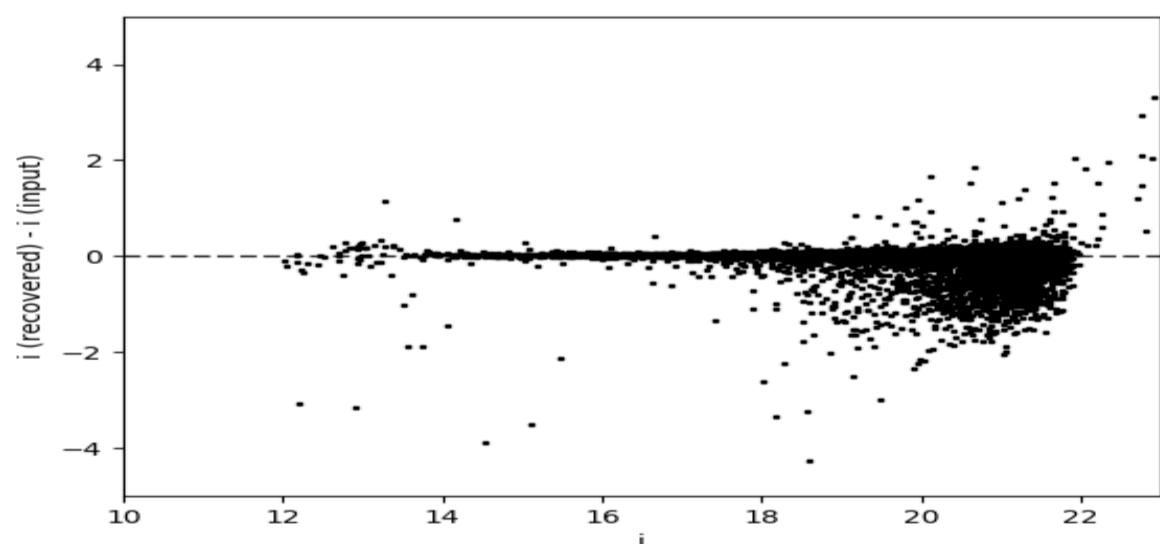


Fig. 2. Difference between input magnitude and recovered magnitude versus input magnitude.

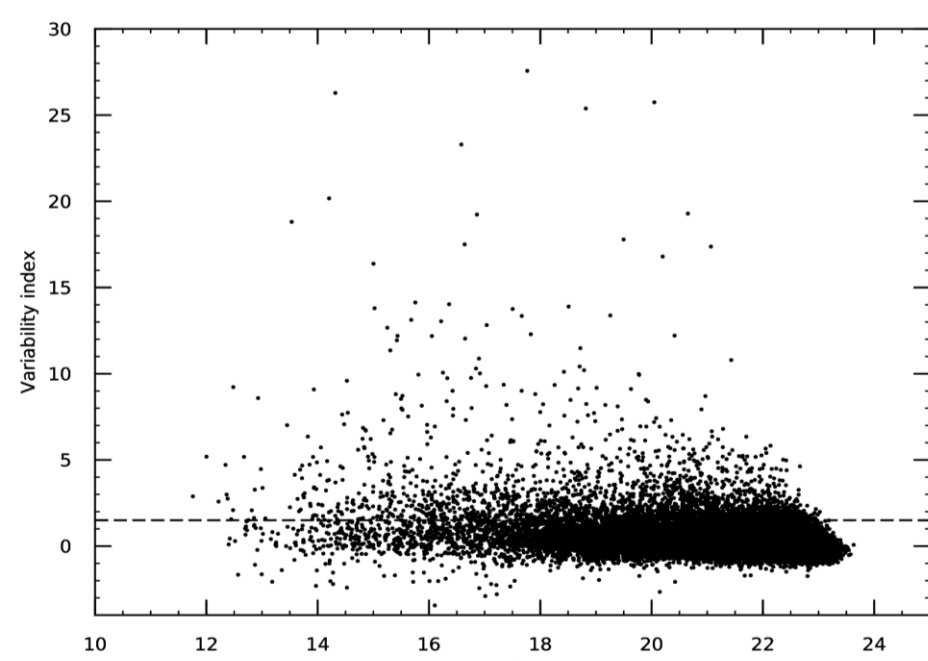


Fig. 3. The variability index L versus i-band magnitude for all of the stars.

Result and discussion

The photometry of the IC10 as a crowded stellar field carried out with using the Stetson software package [3,6].

The median i- and V-band mosaic image of IC10 is shown in Fig. 1. The cross-match identification was performed between our final catalogue and Pan-STARRS (The Pan-STARRS release 1 (PS1) survey-DR1) catalogue (Fig. 2). The variability index L versus i-band magnitude is illustrated in Fig. 3. We identified 247 LPV stars in IC10. The light curves of three very red variable stars with large amplitude are shown in Fig. 4. The i-band magnitude versus V-i colour-magnitude diagram (CMD) for IC10 is shown in Fig. 5.

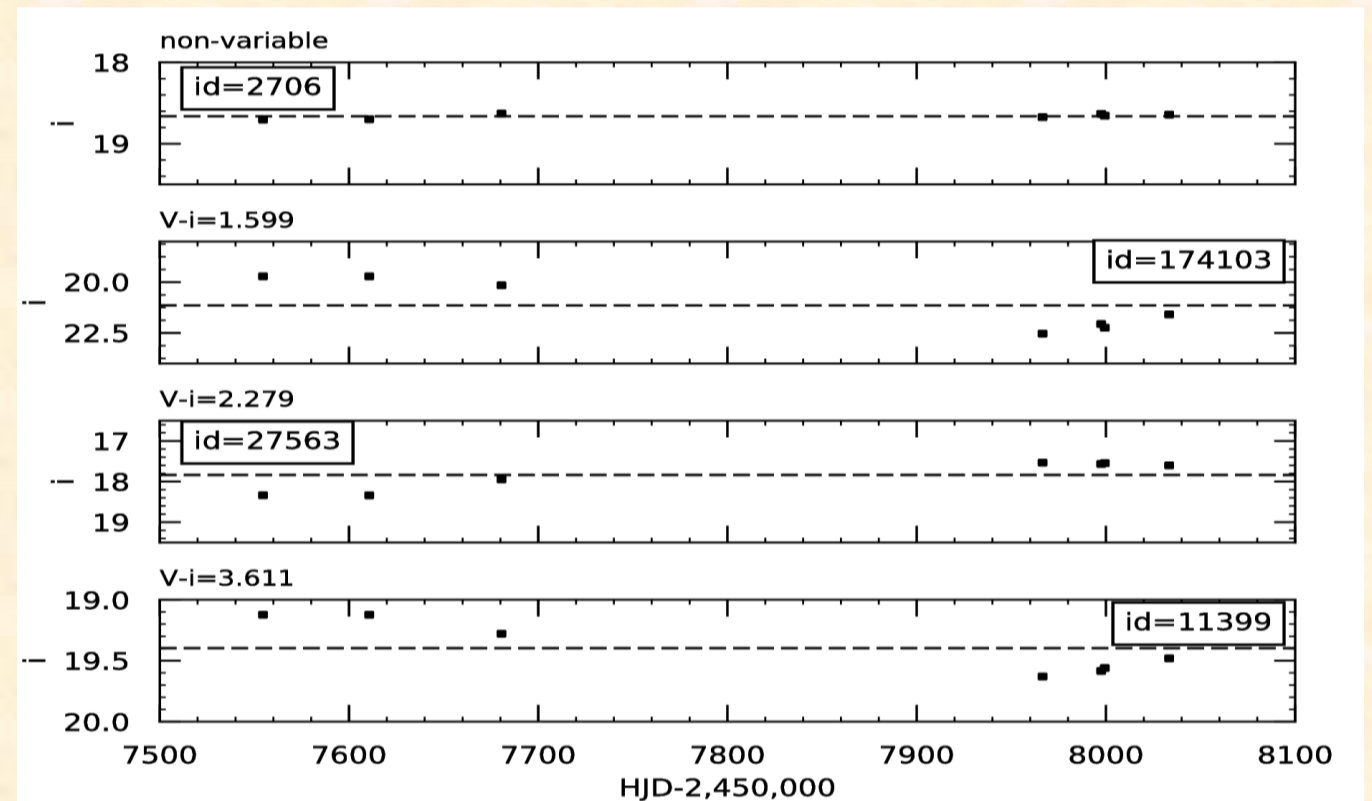


Fig. 4. Example light curves of three very red variable stars with large Amplitude with a non-variable star in the top panel for comparison.

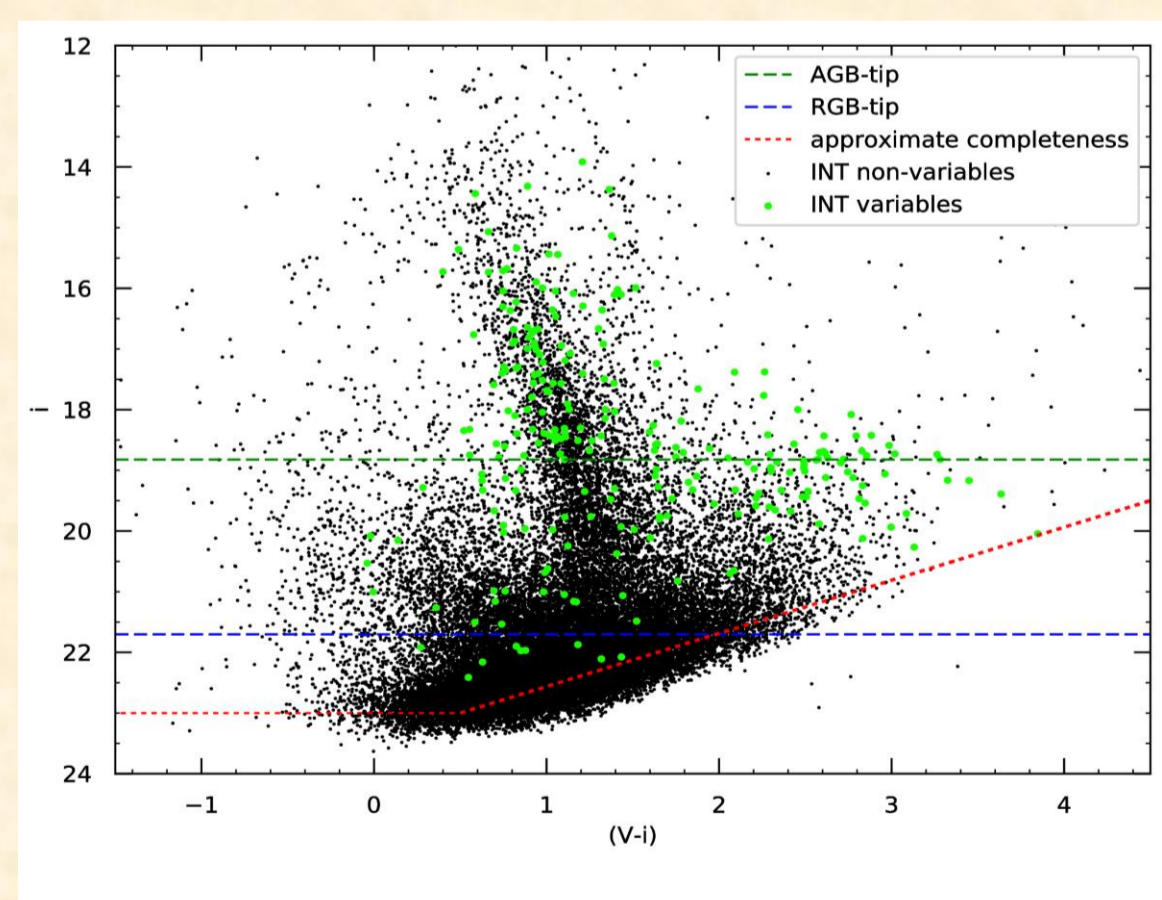


Fig. 5. i-band magnitude versus V-i colour-magnitude diagrams showing the INT variable stars in green.

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