Comprehensive Compilation of Stellar Data in M33's Central Region: Unveiling the Final-Stage Evolution Through Near-Infrared Survey

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Abstract

We obtained data using three cameras at the UK Infrared Telescope (UKIRT) between 2003 and 2007. The observations in the K-band were conducted by the UKIRT Fast-Track Imager (UFTI) over three consecutive nights in August 2005. The Wide Field Camera (WFCAM) data in the J and H bands were collected between 2005 and 2007. Additionally, UIST data in the K-band for the central region of M33 were gathered from 2003 to 2007. Our focus was on stars in the final stage of their evolution, where luminosity is more directly related to birth mass. By combining data from multiple instruments and projects, we aim to identify long-period variables in the galaxy's central region, as this area provides the deepest and most comprehensive investigation of the galactic center due to the nature of the data. The identification of variables will involve photometry on the WFCAM data with PSF calibration followed by a re-examination of the data.

Keywords: luminosity; birth mass; long-period variable, PSF calibration