

[GC-10] An HST/ACS Survey of Star Clusters in the Irregular Galaxy IC10

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We present the result of a survey of star clusters in the Local Group irregular galaxy IC10 using F435W, F606W, & F814W images obtained with the Hubble Space Telescope (HST) Advanced Camera for Surveys (ACS). Bright star clusters in IC10 are partially resolved into stars, allowing us to obtain their Color-Magnitude Diagrams (CMDs). We have found 36 star clusters based on their morphological and photometric information. The star clusters in IC10 are divided into two groups by their morphology. One third of star clusters are circular, and the others are irregular. We estimate ages of the star clusters using the CMDs. Several clusters are young, and most of them are embedded in HII regions. We also find several globular cluster candidates. We discuss the photometric and physical properties of these star clusters in regard to the formation history of star clusters in IC10.

[GC-11] An Ultraviolet Study of Star-Forming Regions in M31

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We present a comprehensive study of star-forming (SF) regions in the nearest large spiral galaxy M31. We use GALEX far-UV (1344–1786 Å, FUV) and near-UV (1771–2831 Å, NUV) imaging to detect young massive stars and trace the recent star formation across the galaxy. The FUV and NUV flux measurements of the SF regions, combined with ground-based data for estimating the reddening by interstellar dust from the massive stars they contain, are used to derive their ages and masses. The GALEX imaging, combining deep sensitivity and entire coverage of the galaxy, provides a complete picture of the recent star formation in M31 and its variation with environment throughout the galaxy. The FUV and NUV measurements are sensitive to detect stellar populations younger than a few hundred Myrs. We detected an estimated 894 SF regions, with size $\geq 1600 \text{ pc}^2$ above an average flux limit of $\sim 26 \text{ mag arcsec}^{-2}$, over the whole 26 kpc galaxy disk. We derive the star-formation history of M31 within this time span. The star formation rate (SFR) from the youngest UV sources (age ≤ 10 Myrs) is comparable to that derived from Ha, as expected. We show the dependence of the results on the assumed metallicity. When star formation detected from IR measurements of the heated dust is added to the UV-measured star formation (from the unobscured populations) in the recent few Myrs, the SFR is slightly decreasing in the recent epochs, with a possible peak between 10 and 100 Myrs, and an average value of SFR ~ 0.8 or 0.9 M yr^{-1} (for metallicity $Z=0.02$ or 0.05 respectively) over the last 400 Myrs.