

population in our population synthesis models for the old stellar systems. Our models are based on the updated Y2 isochrones and HB evolutionary tracks with enhanced Helium abundance, and are calibrated to reproduce the color-magnitude diagram morphology and/or FUV color of EHB GCs in the Milky Way and in M87. We find that our composite models for the 12–13 Gyr old early-type galaxies (ETGs) can naturally reproduce both the far-UV upturn and the Balmer absorption lines of nearby ETGs. We also show, for the first time, that passive evolution of these models back to the past Universe can reproduce the GALEX UV ( $0 < z < 0.2$ ) and the SDSS ( $z \sim 0.1$ ) and the DEEP2 ( $z \sim 0.9$ ) optical data. Moreover, our models with EHB population resolve the well-known discrepancy in ages derived from different Balmer lines, producing consistent ages both from the H-beta and H-delta lines. All of these are significant development compared to the previous models without EHB population.

#### [GC-09] The Star Formation History of Low Surface Brightness Galaxies

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The star formation histories of low surface brightness galaxies are interesting but poorly constrained. These objects tend to be rather blue, contradicting the initial impression that they may simply be faded remnants of higher surface brightness galaxies whose star formation has finished. Other scenarios span a broad range: a young mean age, less dust, a lower metallicity, perhaps even a variable IMF. Distinguishing between these scenarios requires sufficient information to build stellar population synthesis models which, if not unique, at least exclude certain possibilities. The total stellar mass ( $M_*$ ) of a galaxy is most closely traced with the K<sub>s</sub>-band light. Considering that this mass must form over a Hubble time, this in effect gives a measure of the time averaged star formation rate ( $\langle \dot{M}_* \rangle$  [approximate]  $M_* H_0$ ). H $\alpha$  emission traces the location of star formation, and also provides a fairly robust quantitative measure of its current rate ( $\dot{M}_*$ ). We have obtained near-infrared broadband photometry and H $\alpha$  photometry of a large sample of low surface brightness galaxies to measure the current and the time-averaged star formation rate in order to constrain their star formation histories. The current star formation rates of LSBGs generally are higher than their past star formation rate, suggesting that the mean age of their stellar population is relatively young. This may stem from either a late epoch of

formation or a sluggish evolution. In the latter case, the star formation efficiency may be an increasing function of time, perhaps due in part to the slow build up of metals and dust. Nevertheless, star formation remains sporadic and is generally not well organized across the disk. We find a strong correlation between the ratio of current to past average star formation rate and the gas mass fraction. Galaxies with large reservoirs of gas have relatively high current SFRs. There is a conspicuous absence of high gas mass fraction, low SFR galaxies, suggesting that the observed trend is not driven by bursts of star formation with short duty cycles.

#### [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 informations. The star clusters in IC10 are divided 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