Star clusters: basic galactic building blocks
Proceedings IAU Symposium No. 266, 2009
R. de Grijs & J. R. D. Lépine, eds.

doi:10.1017/S1743921309991256

Measuring the GC luminosity function up to $z \sim 0.2$

K. A. Alamo–Martínez,[1] R. A. González–López lira[1] and J. Blakeslee[2]

[1]Centro de Radioastronomía y Astrofísica, Universidad Nacional Autónoma de México, Campus Morelia, Michoacán CP 58190, Mexico

[2]Dominion Astrophysical Observatory, Herzberg Institute of Astrophysics, National Research Council of Canada, Victoria, BC V9E 2E7, Canada

Abstract. Globular clusters (GCs) are stellar systems ($\sim 10^6$ $M_\odot$) with very regular symmetry, single age, and single metallicity. Spectroscopic studies have revealed very old ages, suggesting that GCs were formed in the earliest stages of galaxy formation and assembly. The aim of this work is to find out how far we can measure the GC luminosity function, specific frequency, and radial distribution, applying the surface-brightness-fluctuations (SBF) technique to deep ACS images. To this end, we apply the effects caused by higher redshift to *HST*/ACS images (in two optical bands, F606W and F814W) of M87, an elliptical galaxy with a very well-studied GC system. The effects involved are: (i) evolution, (ii) inverse k correction, (iii) binning of the image to smaller angular size, (iv) cosmological dimming of surface brightness, and (v) noise addition to account for different exposure times. After processing the images we detect the brightest GCs through direct photometry (e.g., with SExtractor), whereas the unresolved clusters are measured through SBFs. The above treatment is repeated for $z = 0.05, 0.1, 0.14$, and 0.18, and the results are compared to the measurements at $z = 0$ to estimate biases and incompleteness.

Keywords. techniques: photometric, globular clusters: general, galaxies: star clusters

---

The full poster (in pdf format) is available at
`http://www.astro.iag.usp.br/~iaus266/Posters/pAlamo-Martinez.pdf`.