THE CORE OF THE M 87 GLOBULAR CLUSTER SYSTEM

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ABSTRACT: We have observed the central distribution of globular clusters in M 87. The core radius of the cluster system is an order of magnitude larger than that of the underlying galaxy.

DISCUSSION

This poster is a brief summary of work we have done on the central distribution of globular clusters in M 87; for a full description of our results see Lauer and Kormendy (1986). This work is based on high-resolution CCD observations taken at CFHT in sub-arcsecond (0"7 FWHM) seeing conditions. The light from M 87 was parameterized by a high resolution isophote fitting algorithm and then subtracted off. Globular clusters were visible in the residual image at all radii from the nucleus, including the core of the galaxy; 124 clusters with m_B < 23.6 have been detected within 60" of the M 87 nucleus.

Our most important finding is that the central distribution of globular clusters in M 87 is flat and has a core an order of magnitude larger than that of the underlying galaxy surface brightness distribution. The present data, when combined with those of other investigators, imply r_C = 88 ± 5 and a central surface density of 72 ± 4 clusters arcmin^{-2} (m_B < 23.6) (see Fig. 1.). Further, the luminosity function of the central clusters is indistinguishable from that measured for clusters outside of 60" by van den Bergh, Pritchet and Grillmair (1985), which constrains any mechanisms operating near the center of M 87 that might selectively destroy or create clusters as a function of their mass. In particular, it appears that dynamical friction cannot produce a core this large from a system initially as centrally concentrated as the underlying galaxy; the large core of the cluster system may be a relic of the galaxy formation epoch.
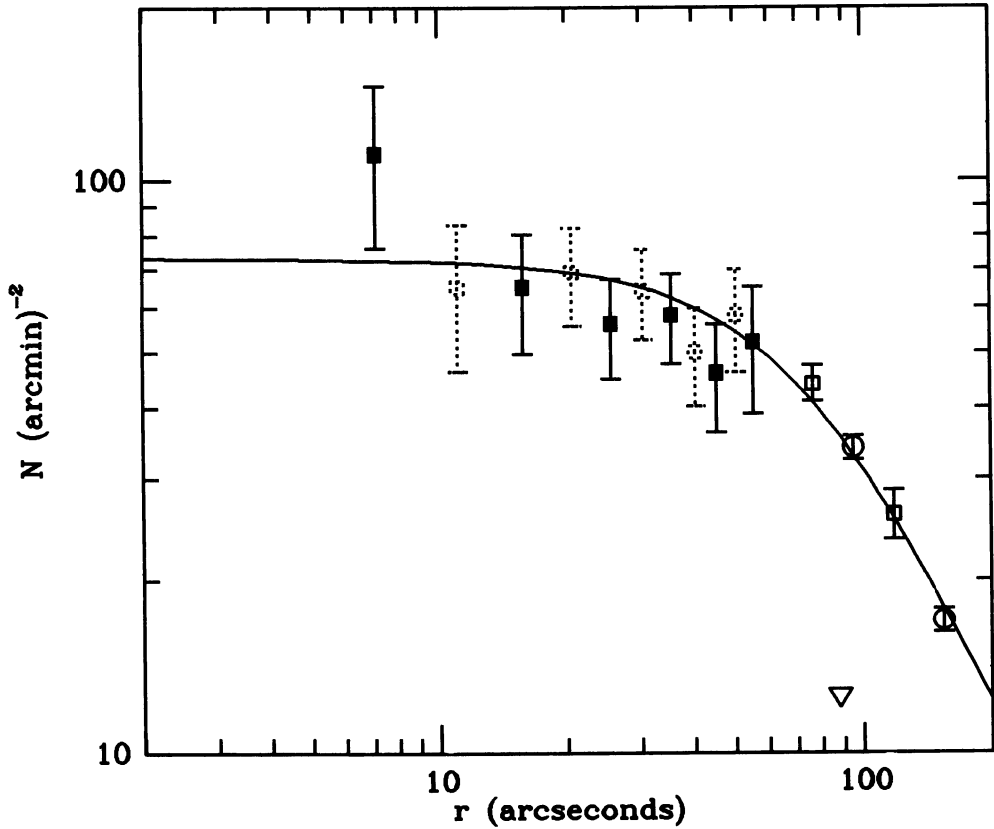
Fig. 1. Central surface density distribution of globular clusters in M.87 with m_B < 23.6. Data from the present study are shown in 10" radial bins both starting from the center (filled squares), and offset by 5" (dashed squares). Data outside of 60" are from van den Bergh, Pritchet and Grillmair (1985) (open squares), and Harris and Smith (1976) (open circles). The solid line is a concentration 2.5 King model fitted to the data. The location of the core radius is marked by an inverted triangle.

REFERENCES

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