

THE UV CONTENT OF VIRGO CLUSTER GALAXIES

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I present a preliminary analysis of three UV images of the Virgo cluster region, obtained by the FAUST experiment (Bowyer *et al.* 1993) in April 1992. FAUST is a wide-field imaging telescope covering an 8° area with effective resolution of $3'.5$. The experiment was constructed by the Berkeley Space Astronomy Group together with the Laboratoire d'Astrophysique Spatiale of the CNES. It operated on board the Shuttle during the mission ATLAS-1.

The detector installed in FAUST, together with the transmission optics, define a spectral bandpass which peaks at 1650\AA . The observations were normally limited to the night-side of the orbit and lasted between 630 sec to 1250 sec (for the Virgo images). The total sky coverage of the three Virgo images is ~ 100 square degrees.

The FAUST images were analyzed with a suite of programs at the Wise Observatory. Sources were detected if they were $4.4\times$ the standard deviation of the intensity distribution of their neighborhood. The locations of the 190 detected UV sources were transformed to celestial coordinates via a number of stars measured by TD-1. The sources were correlated against entries in existing catalogs, such as SAO, HD, Hipparchos Input Catalog, TD-1, *etc.* About one third of the sources had no catalogued counterpart within an acceptable distance from the UV source location. Most were observed at the Wise Observatory, to determine whether fainter stars, below most catalog thresholds, could be the optical counterparts.

We classified 116 UV sources as stars and 74 as galaxies. Most galaxies are spirals of sorts, and only few are ellipticals, or irregulars. In particular, very few of the late-type dwarf galaxies in the Virgo cluster were detected (see also paper by Almozno and Brosch in this volume).

The UV magnitudes of the galaxies measured by FAUST correlate well with the total HI flux integral, as found also by Deharveng *et al.* (1994).

The [UV-B] color, as determined using the FAUST measurements and listed optical properties, correlates well with the T-type of the galaxies. No correlation of the UV color, as measured using FAUST and GUV (a Japanese rocket imaging experiment with effective bandpass 200Å shorter than FAUST), is found with the [FAUST-B] color. The [FAUST-B] color dispersion increases from irregular, through spiral, to elliptical galaxies. The derived spectral energy distributions follow those of Coleman, Wu and Weedman (1980).

Our results will serve to understand star formation in cluster galaxies, as well as the influence of extinction by intra-cluster dust and galactic dust. The UV FAUST measurements of the Virgo cluster, together with similar observations of the Coma cluster and Southern hemisphere clusters of galaxies, will be used to redefine the bright end of the galaxy UV luminosity function.

References

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