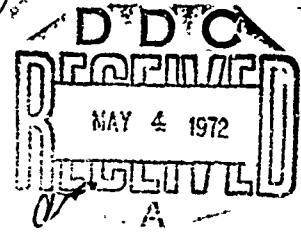


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AD 740931

Final Report  
Contract Nonr-2815(00) NR046-768  
Martha H. Liller  
University of Michigan  
September 9, 1960

On September 1, 1959, under contract to the Office of Naval Research, I began half-time work on an investigation of the distribution of brightness in a group of 31 elliptical and early-type spiral galaxies in the Virgo Cluster. The observational material is a series of six blue Palomar Schmidt plates of the Virgo region. The list of galaxies for investigation includes all elliptical galaxies in the Virgo region which have major axes greater than 80 seconds of arc according to Shapley and Ames (1932) and which I had not investigated previously (Liller, 1960). Also included are several additional galaxies which, as noted from visual inspection of the plates, appear to be worthy of additional study. Table I lists the galaxies presently under investigation and gives for each the number of plates on which it appears.

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During the past year, most of the project time was spent collecting the intensity data for the galaxies. Isophotes were drawn with the University of Michigan Isophotometer for each image of each galaxy. A total of 58 images were studied. The techniques used were the same as in the previous work (op. cit.). In addition, isophotes to be used in intensity-density calibration for the plates were drawn for six standard galaxies. Preliminary reductions of the isophotes for 19 images had been made at the time of termination of the project; a thorough study of these must

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await reductions for all the images.

Some time was also spent on a study of possible ways of best describing the shape of non-elliptical contours of galaxies. The conclusion reached was that the simplest and perhaps most useful method is to determine for each contour the ratio of the area within the contour to the area of an ellipse having the same long and short diameters as the contour. Because the determination of integrated magnitudes of galaxies involves summation of areas within contours multiplied by the appropriate intensities, the above method facilitates computation of total brightnesses of the galaxies with non-elliptical contours.

In early 1960 the decision was made to move from the University of Michigan to Harvard University. Because of this change of location, the contract under which the work was being done was terminated on May 31, 1960. The reductions and study of the data obtained during the academic year 1959-60 are presently being carried out under a grant from the National Science Foundation to Harvard University.

References:

- Liller, M. H., 1960, Ap. J., in press.  
Shapley, H., and Ames, A., 1932, Harvard Ann., 88, 43.

Table I  
List of Galaxies Studied

<u>NGC No.</u>	<u>No. Images</u>	<u>NGC No.</u>	<u>No. Images</u>
4169	1	4458	2
4215	1	4474	2
4233	1	4476	2
4261	1	4478	2
4262	3	4489	2
4270	1	4497	4
4339	1	4515	1
4342	1	4528	3
4343	1	4550	2
4360	2	4551	2
4377	3	4612	1
4379	2	4620	2
4387	2	4638	3
4415	2	4659	2
4434	2	4660	2
4435	2		