ASTRONOMIE

PHOTOMETRY AND MORPHOLOGY OF FAINT GALAXIES

IN THE DIRECTION OF THE VOID 0049 +05

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Coordinates, apparent B-magnitudes, diameters, position angles and many other parameters - e.g. morphological classification, have been defined for 2297 faint galaxies in the region of 0049 + 05. The data have been taken after the reduction of the plate No 1867, taken with the 2-m RCC telescope of NAO "Rozhen", Bulgaria. ORWO ZU-21 emulsion together with Schott GG385 filters have been used to determine the standard Johnson & Morgan B-system. The exposure time was 150 min, so limiting magnitude of the plate is ca. 1.5^m further than POSS ones. Neutral wedge has been exposed for 40 min to calibrate the data in intensities.

Two different methods have been used to identify the galaxies: visual inspection and measurement of the plate and automatically selection and classification of the objects with the INVENTORY package from MIDAS j[1]. To have the latter possibility the plate was scanned on the PDS 2020 GM machine in the Astronomical Institute of the University of Münster, Germany, during 1994. By our visual identification in Heidelberg, Max Plank Institute of Astronomy, 1975, galaxies have been selected and measured - i.e. coordinates, diameters in 5 step scale, morphological parameters, brightness evaluation and position angles, as described in [2]. MIDAS release 95Nov version of INVENTORY gave us much more information including magnitudes and isophotal diameters.

The distribution of the magnitudes and diameters of the galaxies are compared with the *LogNormal* and *Gauss* one. As one can expect the sample is full to the diameters ca. 4" - a linear part of the relation in Fig. 1. Some foreground galaxies - the biggest and the brightest, are located in the lower part of the figure.

The histogram of the distribution of "stars" - empty region, and "galaxies" as they have been separated by the MIDAS context INVENTORY is shown in Fig. 2. The peak of the magnitude of the galaxies is ca. 20 and for the stars it is ca. 17.

There is no meaningful preferable orientation of the galaxies in this region - excluding *PA* — 90 deg (the same as *PA* = 180 deg) galaxies are approximately uniformly
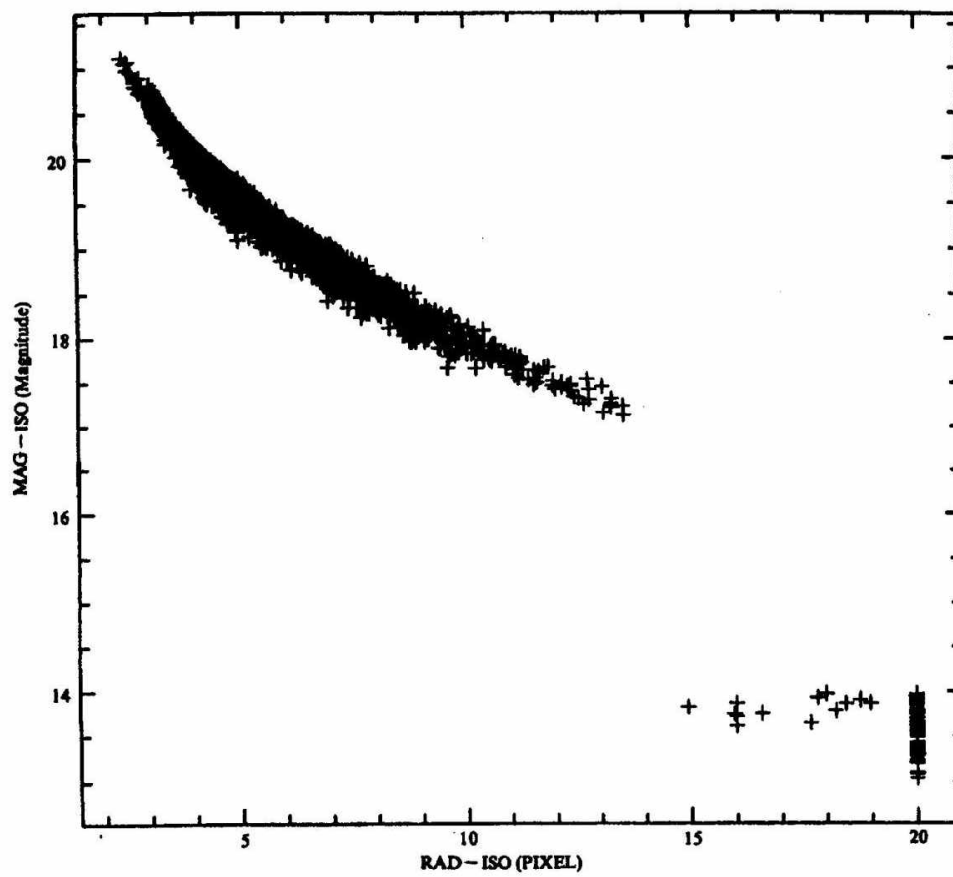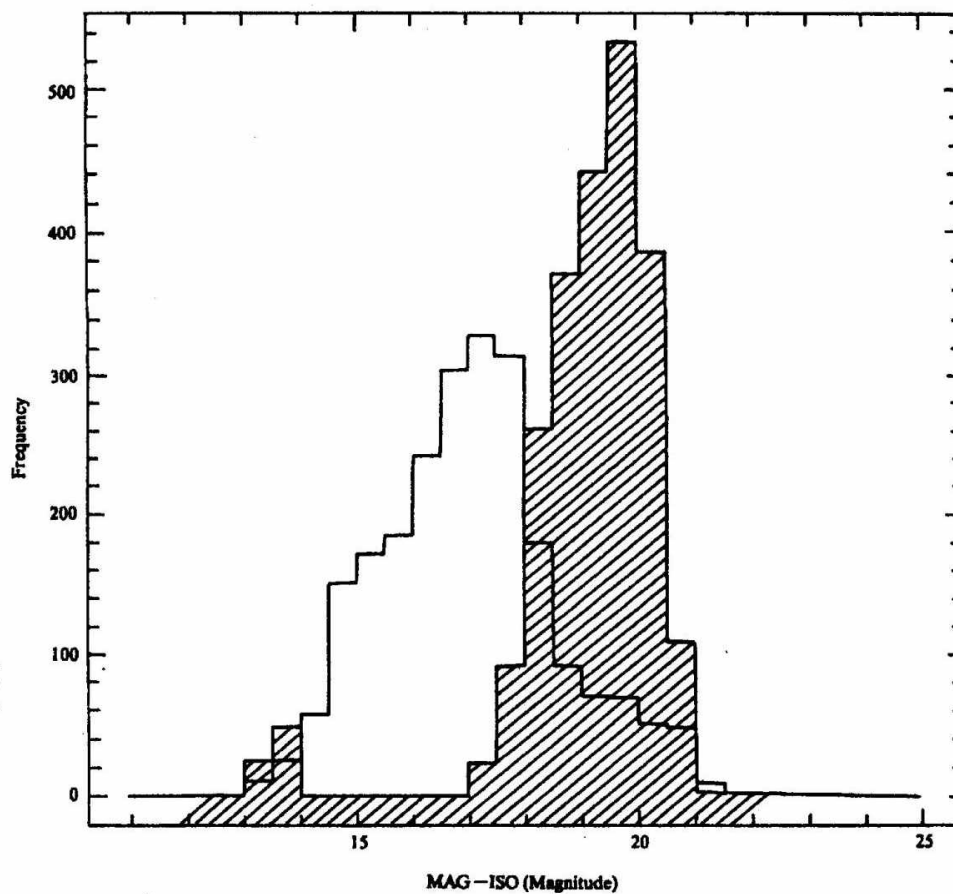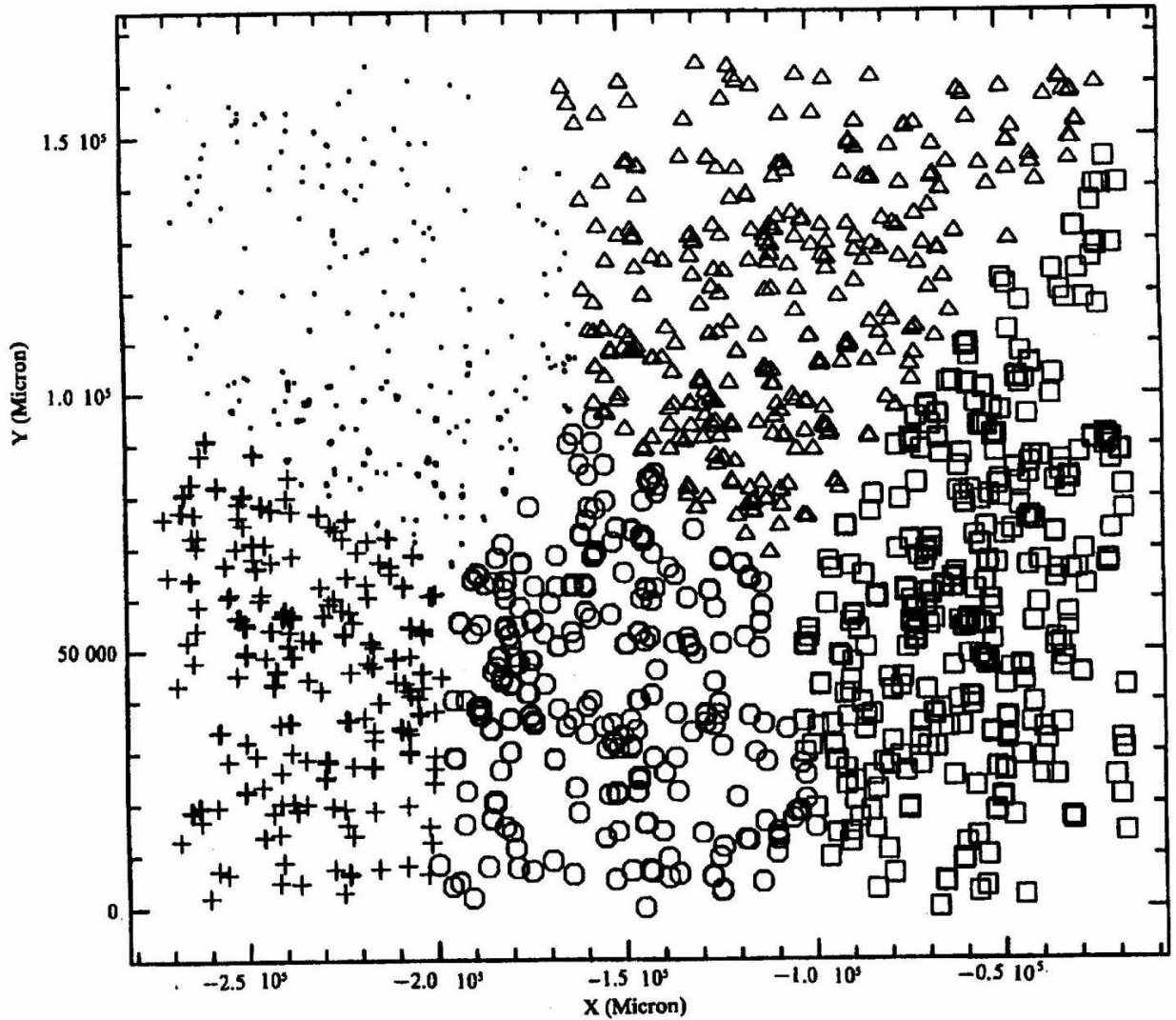
Fig. 1

Fig. 2

Fig. 3

distributed. As F l i n [3] pointed out, galaxies in clusters are predominantly oriented in one direction.

The MIDAS cluster analysis test for all galaxies has been used to study the X, Y distribution (i.e. Alpha - Delta) of galaxies in the sample - Fig. 3. The traces of 5 selfstructured subgroups have been marked. Unfortunately this is two-dimensional distribution of the galaxies as there are no redshifts for these newly catalogued objects.

Comparison between manual and automatic selection of the galaxies on our plates gave us a good agreement - 1975 manually selected objects and 2297 automatically chosen by the INVENTORY. The basic data from the manual selection of this and all other studied by us voids are presented in Table 1.

This work presents a part of a collaborate project between Max Plank Institute of Astronomy, Heidelberg, Germany, and the Institute of Astronomy, Bulgarian Academy of Sciences. The project was devoted to study ca. 20 known voids - see O o r t [4] and Rood [5]. Our previous studies have been reported inPetrov &Kovachev [2], P e t r o v et al. [6],

K o v a c h e v & P e t r o v [7] and P e t r o v [8]. The data in columns 1 and 2 of Table 1 are from [9] and [10] respectively.

The authors are thankful to the ESO organization for using MIDAS 95NOV release. All the photometric and astrometric data are available on magnetic disk under request via E-mail: petrov@astro.bas.bg.

T a b l e 1 Program list and first results of the project "Searching for galaxies in VOIDS"

Name	h	m	s	°		II	Nol	Plates No	No 2	No-gal	N.POSS
V1-1	00	00	00	+12	00	00	35				
V1-2	00	00	00	15	00	00	40		14		
V1-3	00	00	00	18	00	00	40				
V2-1	00	30	00	12	00	00	30				
V2-2	00	30	00	15	00	00	30		3		
V2-3	00	30	00	18	00	00	30				
V3	00	33	00	06	54	00	50		1		
V4	00	41	00	05	00	00	45	1862			414
V6-1	00	45	00	04	00	00	45	1863. 1868			
V5-2	00	45	00	05	00	00	45	1864	2		563
V5-3	00	45	00	06	00	00	45	1865			
V6	00	49	00	05	00	00	45	1867	2	1975	568
V7	02	00	00	13	00	00	35	2043	1		
V8	10	42	00	00	00	00	50	1896. 7084-CA	6	847	
V9	13	00	00	35	00	00	45	1817	2		
V10-1	13	06	00	36	00	00	45	1897	4	1126	
V10-2	13	06	00	35	00	00	45	1899	8	829	
V10-3	13	06	00	34	00	00	45	1898. 7082-CA	7	914	
V11	13	12	00	35	00	00	50	1890	5	444	
V12	16	00	00	18	00	00	100	1830.1831.1818	24	1745	225
V13	23	20	00	13	39	00	50	1861	11	279	90
V14-1	23	30	00	12	00	00	45				
V14-2	23	30	00	15	00	00	45		6		
V14-3	23	30	00	18	00	00	45				

Rem: Name - our conditional name according to Right Accencion. If several fields cover the region, second number is used.
Examp.: Vl-2, V4, V10-1, etc.
No 1 - number of galaxies in 1 sqr. degree according Shane, 1975.
No-gal - galaxies founded on our plates.
No 2 - number of galaxies in Huchra's CfA redshift catalogue, 1992.
N POSS - number of galaxies in the same fields on the POSS plates.
Plates No 7082 and 7084 - 2.2-m telescope, Observatory Calar Alto, IllaJ + GG 385 hypersensibilised 4 hours in forming gas.
Plates No 1818, 1868 - 2-m telescope, 103aF + R-filter. All other plates. - 2-m telescope, ZU21 B-filter.

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