THE SECOND BYURAKAN SPECTRAL SKY SURVEY. QUASISTELLAR OBJECTS AND SEYFERT GALAXIES.

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ABSTRACT. Survey of surveys, and the place of the Second Byurakan Survey (SBS) among them is shortly discussed. Deep low-dispersion surveys cover $>$10000 sq.degrees, but they managed to study only 15% of this area relatively well.

For 450 SBS objects the slit spectra were obtained on 6 m telescope of SAO. The nature of 120 QSOs, 40 Sy galaxies and more than 200 ELG are confirmed. The results of the slit spectroscopy in six SBS fields covering commonly the area of $\sim$100 sq.degrees are presented.

All surveys, except Byurakan Surveys are extremely poor with Sy galaxies, that is their distinction from other surveys. Weak ($16<m<18^m5$) SBS Sy galaxies sufficiently well filled in the interval between QSOs and Sy galaxies, the efficiency of selection does not much depend on redshifts. There is quite good pass from Sy galaxies to QSOs.

1. INTRODUCTION.

Thin objective prism for the selection of the peculiar extragalactic objects firstly was successfully used by B.E.Markarian in 1966 (Markarian 1967) in Byurakan Observatory of the Armenian Academy of Sciences.

Under the influence of Markarian ideas, astronomers from all over the world look for the ways and new techniques for selection of peculiar extragalactic objects.

In 1975 the similar surveys were begun by foreign astronomers, practically on all largest Schmidt-cameras, then on the largest classical telescopes, and now they are successfully continuing. Here we'll shortly stop at some of them, and show the place of SBS among them.

2. SURVEY OF LOW-DISPERSION SURVEYS.

At the present time all over the world about two dozen of low-dispersion surveys with the objective prism, grism and

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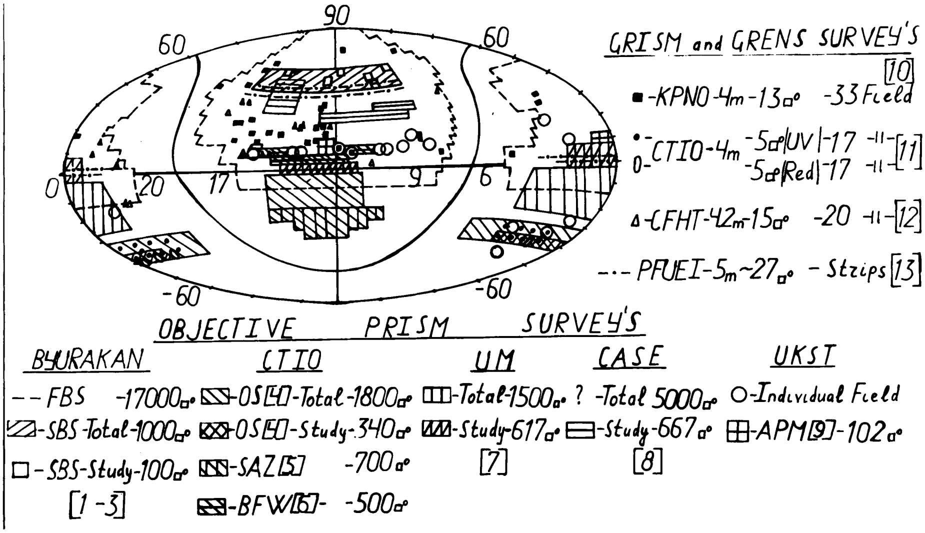
grens(Fig.1) are carried out.The borders of different surveys are shown on Fig.1.The integral characteristics are brought together in Table 1.



[1]Markarian; [2]Lipovetsky et al 1987; [3]Markarian et al 1987; [4] Osmer, Smith 1980; [5] Smith et al 1976; [6]Bohuski et al 1978; [7]MacAlpine, Williams 1981; [8]Sanduleak, Pesch 1987; [9] Foltz et al 1982; [10] Hoag et al 1982; [11] Osmer 1980; [12] Crampton et al 1985; [13] Schmidt et al 1986.

Fig. 1 The locations of different low-dispersion surveys on the celestial sphere.

We see that all celestial sphere in high galactic latitudes covers a few thousand spectral photographs with objective prism obtained with Schmidt-camera, inside of which are placed about hundred small points-strips "pricked" by surveys with grism or grens on the largest 4-5 m telescopes. There are many crossings of different surveys.

Deep objective prism surveys having approximately the same power surpass the common area of grism and grens surveys (65 sq,degrees) of about 200 times.

So, only 1/7 part of 12500 sq.degrees covered by deep objective prism surveys was a success for the quite good investigations.

In all about 2700 QSO cantidates are selected. Slit spectra were obtained for about 1500 (60%) of them, real quasars turn out to be 1000.

3. THE SECOND BYURAKAN SURVEY.

SBS survey with observed plate material covers the area of ~1000 sq.degrees. In all we select about: 1000 QSOs candi-

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Table 1

Survey	m	Ω/sq.deg. Total	Ω/sq.deg. Study	Number in all	Number of QSO Cand.	Number of QSO Slit Spectra	Number of QSO Real
Surveys with objective prism on Schmidt-camera							
FBS	17	17000	17000	1500	43	43	30
SBS	19.5	1000	100	741	240	150	80
CIIO	18.5	5500	950	1000	520	400	280
Case	18.5	5000	667	1128	252	67	20
UKST(APM)	21	1000	200	1000:	450	400	350
Surveys with grism and grens on 4-5 m telescopes							
CTIO	22	-	10	-	120	120	88
KPNO	22	-	13	-	180	?	?
CFHT	22	-	15	-	619	200	163
PFUEI	22	-	27	-	270	107	28

dates, 1500 BSOs and 2000 weak galaxies with UV continua. The expected number of QSOs and Sy galaxies in SBS survey must be – 1000 QSOs and 400 Sy galaxies respectively.

On 6 m telescope of SAO we obtained now slit spectra for 450 SBS objects. We confirmed the nature for 120 QSOs, 40 Sy galaxies and more than 200 ELGs. We investigated in more details six SBS fields (each of size 4^ox 4^o), in all ~100 sq.degrees. In Table 2 we present the results of spectroscopy for six fields.

Table 2

The results of slit spectroscopy for SBS* six fields

Type	Number	Slit spectra	QSO	Sy	WD	Sd	ELG	Inconclusive Spectra
QSO	102	75	48	4	13	5	-	4
BSO	138	85	17	5	33	15	8	8
UVG	162	125	-	17	-	-	108	-
ELG	239	100	-	3	-	-	90	7

*)BS (N=100) were excluded from the examination.

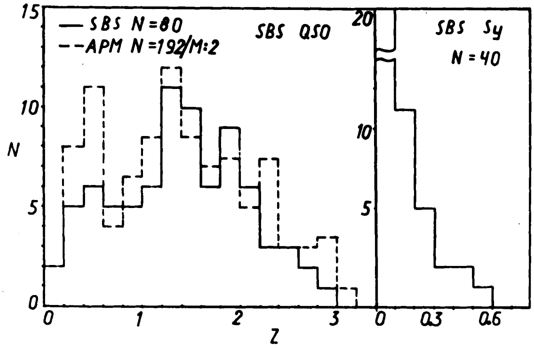
There are also 13 well-known QSOs and three Sy galaxies on these six fields, found by us, but not included in our lists. In all the number of QSOs and Sys with known slit spectra on six SBS fields are 78 and 32 respectively. Slit spectra for 80 reminding objects are not yet obtained.

Therefore the lower estimate for surface density of SBS QSOs and Sy galaxies till $m_B = 18^m.5$ is

$\rho_{QSO} > 1$ QSO/sq.degree, $\rho_{Sy} > 0.3$ Sy/sq.degree.

The redshifts distribution of QSOs and Sys for SBS and APM survey (Foltz et al 1987, dashed line) is shown on Fig.2. Their similarity allows us to try our visual (subjective) and mashine (objective) techniques for QSOs selection.

Luminosity histogram of SBS objects is shown on Fig. 3. From this figure you can see how the border separating objects on QSOs and Sy galaxies by their luminosity $M>-24^m$ is conventional.



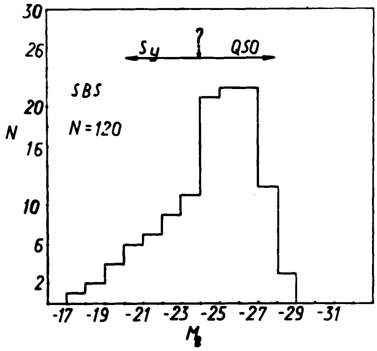


Fig.2 The redshift distribution of QSOs and Sys for SBS and APM survey(dashed line).

Fig.3 Luminosity distribution of SBS QSOs and Sy galaxies.

There is a lot of typical SBS Sy galaxies with $0.1 < z < 0.6$, which might be classified as QSOs by restriction from luminosity $M < -24^m$. And the opposite, there are many SBS QSOs with $z \sim 0.5$ having $M > -24^m$.

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