THE HAMBURG QUASAR SURVEY

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The Hamburg Quasar Survey is carrying out an objective-prism survey on Schmidt plates taken at the Spanish-German Astronomical Centre (DSAZ) on Calar Alto/Spain. We use a 1.7 deg objective-prism providing unwidened spectra with a dispersion of 1390 Å/mm at H_γ on hypersensitized KODAK IIIa-J plates. The field size is 5.5 x 5.5 deg. For each field, two prism plates are taken to improve the recognition of faint spectra. A direct plate is taken to determine accurate positions, and to recognize overlaps and extended objects. The coverage of the extragalactic fields up to 1993 is given in Engels et al. (1993).

The Schmidt plates are digitized in Hamburg using a PDS-Microdensitometer 1010G. The densitometer is controlled by a dedicated KWS computer with 68030 cpu and OS9/68K operating system, running with a special software package to digitize the plates at high speed. Scanning of prism plates in a low resolution mode needs about 3 hours, while the direct plates are digitized within 9 hours at full resolution. An algorithm to remove the background is applied on-line to keep the data storage space small. The data are saved on magneto-optical disks. This set-up allows the handling of several hundred plates in a reasonable amount of time.

Quasar candidates are selected on the base of their blue continua. The digitized spectra are fitted with a polynomial of 2nd degree and spectra flatter than a given dividing line are selected. Figure 1 gives the loci of all spectra in a plot of the slope at 4400 Å against integral density. The dividing line is determined individually for each plate. Selected objects are scanned with full resolution and classified visually on a vector graphics screen. Among 500-2000 'blue' low-resolution objects per field, we find 5 to 10 QSO candidates, besides hot stellar objects, cataclysmic variables and emission-line galaxies.

Up to July 1993 the search down to B ~ 17.5 was completed in 137 fields (30% of the fields covered with plates). Follow-up spectroscopy was made 1992/93 during three observing periods with the 2.2 m telescope on Calar Alto, confirming 48 QSO out of 201 observed candidates. Many of the non-QSOs are in themselves interesting hot stars. The most important characteristics of the AGN sample are given in Fig. 2.

H. T. MacGillivray et al. (eds.), Astronomy from Wide-Field Imaging, 729–730.

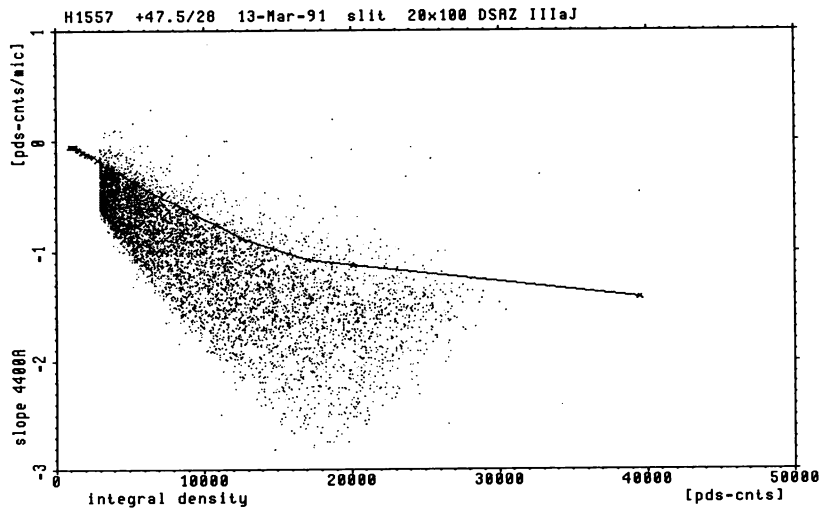

Figure 1. Location of spectra in a plot of the slope of the continuum at 4400 Å against integral density.

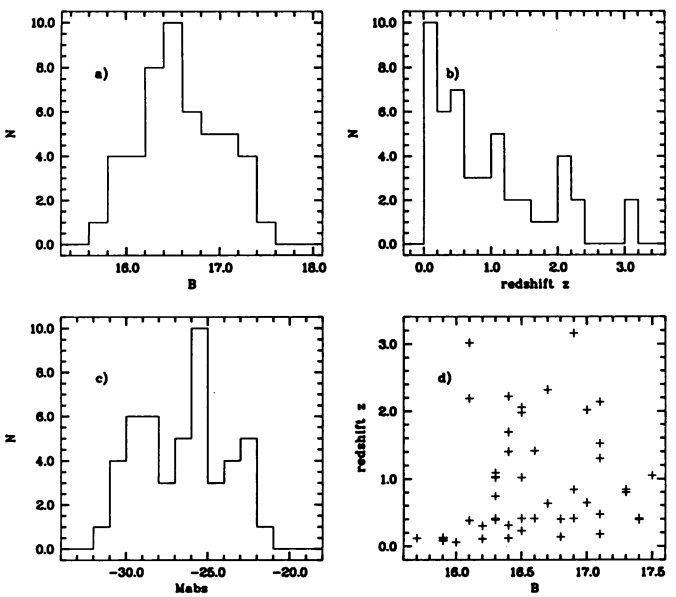

Figure 2. Properties of verified QSOs from the Hamburg Quasar Survey: **a)** Brightness distribution in B, **b)** redshift distribution, **c)** distribution of absolute brightness, and **d)** redshift-brightness diagram.

References

Engels, D., Cordis, L., Groote, D., Hagen, H.-J. and Reimers, D., 1993. Newsletter No. 3 of the IAU Working Group on 'Wide-field Imaging', ed. H.T. MacGillivray, p. 50.

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