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The Hamburg Schmidt Survey

The Hamburg Observatory is currently carrying out an objective prism survey on Schmidt plates taken at the Spanish–German Astronomical Center (DSAZ) on Calar Alto/Spain (Engels et al., 1988). The Schmidt telescope was moved in 1980 from Hamburg to Calar Alto. The telescope is an f/3 instrument with a mirror diameter of 120 cm and a free aperture of the correction plate of 80 cm. 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 on the 24 x 24 cm plates is 5.5 x 5.5 deg, giving a scale of 12 µm/arcsec on the plate. Under conditions of good seeing the FWHM of the images is 30 µm (plate resolution) giving a spectral resolution of 45 Å at H_γ. For each field two prism plates are taken to identify spectra of interesting objects with higher reliability. Additionally a direct plate is taken to determine accurate positions, and to recognize overlaps and extended objects. The current coverage is shown in Fig. 1. A complete coverage of the fields with $\delta > 0°$ and $|b| > 20°$ is planned until 1996. Until the end of 1992 we obtained 735 prism and 490 direct plates in 450 fields, covering about 12,000 deg^2 of the sky.

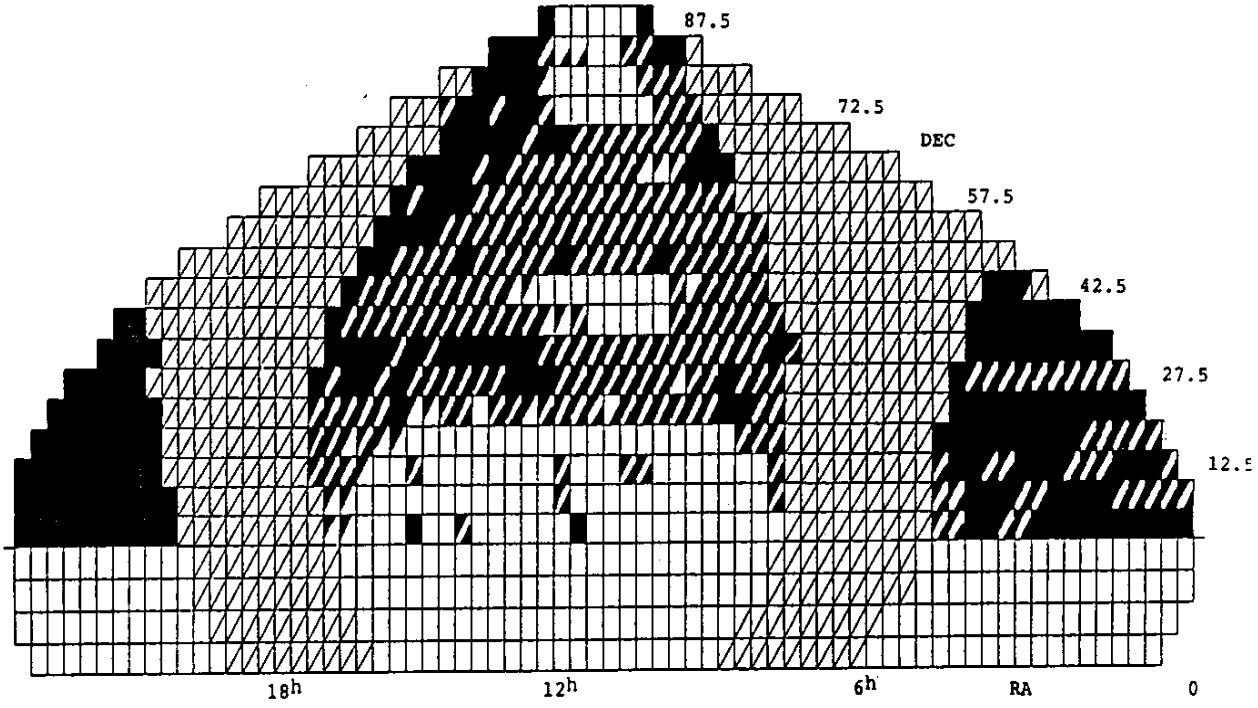

Figure 1. Coverage of the Hamburg Schmidt Survey until the end of 1992. Half colored fields have one, while full colored fields have two prism plates.

The Schmidt plates are digitized in Hamburg by a PDS-Microdensitometer 1010G. The densitometer is controlled by a KWS computer and a new software package was developed to digitize the plates with high speed. Currently the prism plates are scanned in 3 hours in a low resolution mode, while the direct plates are scanned within 9 hours with full resolution. An algorithm to remove the background is applied on-line to keep the data storage space small. This set-up allows the handling of several hundred plates in a reasonable amount of time.

The digitized data base of objective prism spectra is used for several purposes. The Hamburg Quasar Survey (HQS) aims for the discovery of bright QSO ($B < 17.5$). Already several extraordinary bright QSO were found (Reimers et al. 1989; Groote et al. 1989; Hagen et al. 1992). In collaboration with the MPE Garching we identify ROSAT X-ray sources on the Schmidt plates (Bade, Engels et al. 1992; Bade, Dahlem et al. 1992). About 6000 X-ray sources were analyzed on 4600 deg^2 until the end of last year. Hot stars are searched for in collaboration with the Universities of Kiel and Bamberg (Heber et al., 1991).

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