

c): Digitization techniques

The past 10–15 years have seen considerable advances in the large-scale digitisation of photographic plates, which previously could only be digitised in very small parts or measured very tediously (and subjectively) by eye. It is good to see that there are now several groups around the world (or at least very soon will be) with the capability of systematically digitising the photographic sky survey material. Also, we can now realistically anticipate the availability of large amounts of this digitised material, as evidenced by the plan of the STScI to distribute the scans obtained under the Space Telescope Guide Star programme as well as the plans of the APS and COSMOS machine groups to release their catalogues of the Northern and Southern sky respectively.

With these large digitisation programmes, we are now at last gaining access to quantities of data hitherto undreamed of. Detailed studies of Galactic structure have been made possible, as have quantitative studies of the large-scale structure of the Universe from (for the first time) purely objective measurements of the distribution of galaxies and clusters. The second epoch sky surveys now well underway will allow other far-reaching studies to take place, such as the kinematics of the Galaxy and the halo system of star clusters and satellite dwarf galaxies, studies of the faint end of the stellar luminosity function and searches for brown dwarfs.

Some groups have demonstrated the possibility of digitally co-adding photographic plates, and we now see the very real promise of pushing photographic Schmidt material to magnitudes as faint as $B \sim 25$ (see the article by Hawkins in this Newsletter). Experiments with the use of fine-grain film on wide-field telescopes has shown that we have not yet reached the limit attainable with photographic material and provides further scope for new sky surveys based on these emulsions. Obviously, while we continue to use photographic materials for sky surveys, we continue to require digitisation devices and we must strive towards as accurate extraction of the information contained on the photographs as possible.

Digitisation of the photographic sky survey material is at the present time a very active field (as witnessed by the very important contributions presented at the 1991 conference in Edinburgh on ‘Digitised Optical Sky Surveys’). Even if in the coming years the photographic medium is superceded by the use of CCDs for undertaking sky surveys, there is still a considerable wealth of information in the 1st and 2nd epoch sky surveys which must be extracted and made available as a legacy for future generations of astronomers.

I would like to hear the views of readers of this Newsletter. The questions I would like to raise are:- what should be digitised? do we only need to digitise the whole sky in a single passband for a single epoch, and only require multi-epoch, multi-colour scans for a small representative area? or should we digitise the entire sky survey material? should we digitise the objective-prism plates? should we digitise all of the good quality plates from all of the major Schmidt Telescope archives? Please, let me hear your views!!

Obviously, the enormity of an undertaking for bulk digitisation will mean that it is not practical for any single group to take the entire task upon itself. Local scientific interests of each group may drive them to scan a subset with a particular scientific

goal in mind. I hope that we can set up some form of (informal) coordination of the digitisation activities. At the very least there should be exchange of information on scanning plans, and this has already been instituted through the meetings of the 'DOSS' community which will continue under the wider Working Group.

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