

# THE AUTOMATIC MEASURING MACHINES AND GROUND-BASED ASTROMETRY

T.P. Sergeeva

Main astronomical observatory of National Academy  
of Sciences, Kiev, Ukraine

E-mail: sergeeva@mao.gluk.apc.org

**ABSTRACT.** The introduction of the automatic measuring machines into the astronomical investigations a little more than a quarter of the century ago has increased essentially the range and the scale of projects which the astronomers could capable to realize since then. During that time, there have been dozens photographic sky surveys, which have covered all of the sky more than once. Due to high accuracy and speed of automatic measuring machines the photographic astrometry has obtained the opportunity to create the high precision catalogs such as CpC2. Investigations of the structure and kinematics of the stellar components of our Galaxy has been revolutionized in the last decade by the advent of automated plate measuring machines. But in an age of rapidly evolving electronic detectors and space-based catalogs, expected soon, one could think that the twilight hours of astronomical photography have become. On opposite of that point of view such astronomers as D.Monet (U.S.N.O.), L.G.Taff (STScI), M.K.Tsvetkov (IA BAS) and some other have contended the several ways of the photographic astronomy evolution. One of them sounds as: "...special efforts must be taken to extract useful

information from the photographic archives before the plates degrade and the technology required to measure them disappears". Another is the minimization of the systematic errors of ground-based star catalogs by employment of certain reduction technology and a dense enough and precise space-based star reference catalogs. In addition to that the using of the higher resolution and quantum efficiency emulsions such as Tech Pan and some of the new methods of processing of the digitized information hold great promise for future deep ( $B < 25$ ) surveys (Bland-Hawthorn et al. 1993, AJ, 106, 2154). Thus not only the hard working of all existing automatic measuring machines is apparently needed but the designing, development and employment of a new generation of portable, mobile scanners is very necessary. The classification, main parameters of some modern automatic measuring machines, developed with them scientific researches and some of the used methods of high accuracy, reliability and certainly ensuring are reported in that paper. This work are supported by Grant N U4I000 from International Science Foundation.

**Key words:** Astronomical instruments.