

# ASTROMETRY WITH WIDE-FIELD TELESCOPES IN THE ABASTUMANI ASTROPHYSICAL OBSERVATORY

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For the past 30 years purposeful, highly accurate photographic observations have been carried on in Abastumani to solve a series of astrometric problems. The principal observational instruments are a 70 cm Maksutov system mirror telescope — AS-32 ( $F = 2100$  mm) and a 40 cm double Zeiss astrograph ( $F = 3000$  mm).

## 1. Solar System

A tradition of observations of minor planets and comets has been continued successfully since the work of Khatisashvili (1966, 1971b, 1972, 1976, 1978, 1987).

Observations of major planets and satellites were also conducted. Khatisashvili aided by Salukvadze (1973, 1975) carried out the observations of Phobos, Deimos and Mars with an accuracy of 0.5 - 0.6 arcsec. Kiseleva (Pulkovo) & Chanturiya (1987) initiated work on positional observations of Jupiter, Saturn, Uranus, Neptune and their satellites. Since 1984 more than 1000 exposures were obtained in Abastumani; random errors equalled 0.2 - 0.3 arcsec. Chanturiya, in cooperation with Salukvadze, repeated an observational series of Phobos, Deimos and Mars in 1986-1988. Results were published in co-authorship with Kalinichenko & Kiseleva (1988, 1990); the accuracy of those observations was 0.2 - 0.3 arcsec. Kiladze conducted positional observations of Pluto (1986) and a year prior to the discovery, predicted the existence of Charon, Pluto's satellite (Kiladze 1977).

## 2. Accurate Positions of Stars and Extragalactic Radiosources

A list of accurate positions of 42 novae has been obtained (Khatisashvili 1971a). Work was started on a large scale implementation of the programme 'Fon', suggested by the Ukrainian astrometrists (Kolchinskij et al. 1977, 1981), while in Abastumani Inasaridze R.Y. has already received exposures, totally covering an area between  $-20^\circ$  and  $+30^\circ$  in declination for stars up to 16<sup>m</sup>. Abastumani Observatory is also participating in a programme of optical observations of extragalactic radio sources. Inasaridze (1984, 1987, 1989), for example, published the positions of 42 radio sources, and a list of another 16 of these objects is ready.

### 3. Proper Motions of Stars and Investigation of Galaxy Structure

Chanturiya (1977, 1980a, 1980b, 1982) has carried out work on determination of proper motions of zirconium stars with the aim of obtaining their absolute magnitudes using the method of statistical parallaxes. Epoch I date is from the 'Carte du Ciel' catalogue. The plates for epoch II are from the telescope AS-32. The accuracy of one proper motion reaches  $\pm 0.004$  arcsec/year. Absolute magnitudes were obtained for 74 zirconium stars, and an attempt was made to enlarge the sample of those objects in the Galaxy.

### 4. Perspectives for the Future

In the near future, photographic observations of Solar system bodies and extragalactic radiosources will be continued. Of primary importance is the problem of processing the enormous accumulated collection of observational material on major planets and their satellites.

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