Report on the determination of the coordinates of the Astronomical Observatory of the Ankara University

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(Submitted by the Department of Astronomy)

Özet : Ankara Fen Fakültesi Astronomi rasathanesinin coğrafya koordinatları üzerine kısa bir rapor verilmektedir.

Sonuçlar :

Coğrafya boylam	$\lambda = 2^h\ 11^m\ 07^s,\ 131 \pm 0^s.006$
Coğrafya enlem	$\varphi = 39°\ 50'\ 37'',\ 002 \pm 0'',14$
Denizden olan yükseklik	$h = 1256{,}69$ metre

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Summary : An abbreviated report is submitted concerning the determination of the geographic coordinates of the Astronomical Observatory of the Fen Fakültesi. The results are;

Geographic longitude	$\lambda = 2^h\ 11^m\ 07^s,\ 131 \pm 0^s.006$
Geographic latitude	$\varphi = 39°\ 50'\ 37'',\ 002 \pm 0'',14$
Height above sea level	$h = 1256{,}69$ meter

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The new Observatory of Ankara is situated on a flat ridge at a distance, along the road, of 18 km from the city. The observations needed to find the exact longitude and latitude started September 27 - 1960.

1. Determination of latitude.

Observer : Arif Çöklü.

Instrument : Wild T_4

Method : Horrebor - Talcott

As is known with this method in the meridian pairs of stars are measured while with each pair the positions of the two stars relative to the zenith is symmetric. In this way during two nights 12×2 stars were measured. From these observations we find:

$$\varphi = \frac{\delta_n + \delta_s}{2}$$

Where δ_s and δ_n are the declinations of the stars south and north of the zenith respectively. In this way from the twelve pairs for the geographic latitude we find

$$39^\circ\ 50'\ 37''.213 \pm 0''.14$$

For the reduction to sea level (Hayford - Ellipsoide) we apply the coorection $D = 0{,}000171\ h_m \sin 2\varphi = -0'',211$. Consequently we have:

latitude observed	$39^\circ\ 50'\ 37'',213 \pm 0'',14$
correction	$-0'',211$
corrected latitude	$39^\circ\ 50'\ 37'',002 \pm 0'',14$

2. Determination of longitude:

Observer: Faruk Uzel. Instrument: Wild T_4
choronometer Ulysse Nardin
choronograph Wetzer
receiver RG 37 Marconi

Method: Registration.

During four nights 3 groups of six stars each were observed. Each group consisted out of 5 stars with declination $18^\circ < \delta < 55^\circ$ and one circumpolar star for which $\delta > 70^\circ$. Altogether during these four nights 72 stars were observed. After each night the mean value Δu for the group of 18 stars was calculated and next the longitude was determined with the help of the signals TQG5, RWM and GBR.

$$\lambda = 2^h\ 11^m\ 07^s,131 \pm 0^s,006$$

With both set of measurements the following catalogues were used: «FK 3 Apparent places of fundamental stars» and Boss «General Catalogue».

3. Heights :

Through comparison with other points the altitude was found to be $h = 1256{,}69$ meter.

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