

## TRANSIT OF MERCURY, 2003

A transit of Mercury over the disk of the Sun will occur on May 7. The entire transit will be visible in Asia except the extreme eastern portion, Africa except the western portion, Europe except Portugal and western Spain, Greenland except the southern portion, and most of the Indian Ocean.

The times provided in the following tables are given provisionally in Universal Time, using  $T(A) = +68^\circ$ . Once the value of  $T$  is known, the data on these pages may be expressed in Universal Time as follows:

Define  $T = T - T(A)$ , in units of seconds of time.

Change the times given in provisional Universal Time by subtracting  $T$ .

Apply the correction  $0.00417807 T$  degrees to the longitudes in such a way that if  $T$  is positive, the longitudes shift to the east.

Leave all other quantities unchanged.

Longitude is positive to the east and negative to the west.

### GEOCENTRIC PHASES

	UT				Position Angle $P$ °	Mercury being in the Zenith in		
	d	h	m	s		Longitude °	Latitude °	
Ingress, exterior contact	May	7	05	12	52.3	15.3	+101 00.1	+16 57.4
Ingress, interior contact		7	05	17	20.2	14.5	+ 99 52.9	+16 57.3
Least angular distance		7	07	52	20.4		+ 60 58.0	+16 54.4
Egress, interior contact		7	10	27	15.5	291.6	+ 22 04.4	+16 51.4
Egress, exterior contact		7	10	31	43.5	290.8	+ 20 57.2	+16 51.4

Least angular distance: 11 48 .3

The position angle  $P$  of the point of contact is reckoned from the north point of the limb of the Sun towards the east.

The position angle  $V$  of the point of contact, reckoned from the vertex of the limb of the Sun towards the east, is found by:

$$V = P - C$$

where  $C$ , the parallactic angle, is given by:

$$\tan C = \frac{\cos \phi' \sin h}{\sin \phi' \cos \delta - \cos \phi' \sin \delta \cos h}$$

in which  $\phi'$  is the geocentric latitude of the place,  $\delta$  is the declination of the Sun, and  $h$  is the local hour angle of the Sun;  $\sin C$  has the same algebraic sign as  $\sin h$ .