

omegon

PLANISPHERE

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The planisphere

This planisphere or turnable star chart is the perfect way to learn how to recognise the stars and constellations. It is designed for a latitude of 50° North and can be used perfectly between 45° and 55° North. An important fact is that it is designed for the centre of each time zone. This means it can be used anywhere between 45° and 55° North without any problem. However, you can make fine adjustments to compensate for your location. The Sun and stars rise in the east, due to the eastward rotation of the Earth. This means that in a place to the east of you the Sun and stars rise earlier, and in a place to the west later. This difference in time is exactly known: 4 minutes per degree longitude. The planisphere can be used in the centre of your time zone without any adjustment, but to the east and west of this, adjustments can be made to compensate for the time difference, when you need more accuracy (see 'Tip 1').

Finally, the planisphere is designed to be used together with a pair of binoculars: an underestimated instrument when looking at the stars! Binoculars are easy to use, are relatively cheap and have wide fields of view oriented right side up. Apart from some 700 stars the planisphere contains nearly 300 'objects for binoculars'!

IMPORTANT: Be sure to read the instructions carefully, before you apply the tips below!

PLN-ASE

Sun and planets

The Sun, the Moon and the planets do not stand still in the sky, as the stars appear to do. They move along or near an imaginary line: the **ecliptic**. It is this line along which the Sun moves in the sky, a segment for every day of the year. The ecliptic in the planisphere is divided in all of these segments: each dot or dash represents one day. The dashes represent the 1st, 11th and 21st of the month, while the month number is shown for every 1st day of a month. For example, '1' represents 1 January, '2' = 1 February, etc.).

Tip 1: Adjustment to place of observation

When you are not situated in the centre of your timezone, you can adjust the time on the upper disc. We have already seen that the time difference is 4 minutes per degree longitude. Adjusting is performed as follows:

- ★ **west of centre time zone: PLUS 4 minutes per degree**
- ★ **east of centre time zone: MINUS 4 minutes per degree**

Example: Suppose, you're observing the sky from Bern, Switzerland, at a longitude of 7°30' East. The centre of the time zone involved is at 15° East. The difference in longitude is 7°30, or in time $7\frac{1}{2} \times 4 = 30$ minutes. As you are situated to the west of 15°, you'll have to add 30 minutes to the time on the upper disc. That means, that when a star according to the planisphere rises at 22:00, it rises at 22:30 in Bern.

Tip 2: Determining time of sunrise/sunset

The ecliptic is divided into the days of the year, as we have seen earlier. Each dot or dash represents the position of the Sun on a certain date. This position can be easily determined, by looking up the correct month-number near the ecliptic and counting the dots and dashes until the desired day is found. Now place this dot or dash (i.e. the position of the Sun) **exactly** on the eastern horizon (sunrise) or western horizon (sunset) and read off the **time opposite to the date in question**.

Instructions

On the blue star chart the months and days of the year are shown. On the upper disc you'll find the time of the day.

What do you have to do?

- ★ Adjust the upper disc, so as to arrive at the desired time opposite the desired date (in the case of daylight saving time, use the small numbers);
- ★ Hold the planisphere above your head, so, that the points of the compass on the planisphere correspond with the real directions;
- ★ The oval aperture in the upper disc now shows that part of the starry sky, that is visible at the desired moment;
- ★ For orientation, first try to find some very bright stars, preferably high above the horizon (around the zenith: point 'Z'). The North Celestial Pole (North Star, Polaris) is exactly in the centre of the Planisphere (where the hole is) and is therefore not shown. See the illustration top left. Good luck!

Key to symbols

- +● double star
- variable star
- ⊙ open cluster
- ⊕ globular cluster
- ⊕ planetary nebula
- ☁ diffuse nebula
- ☉ galaxy
- * special point or faint but interesting star
- ¼••• ecliptic (Sun on 1 April)

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