

Description of the moon -phase-calculation - program

As a basis for the first part of the calculation the analysis serves after **Bradley. E. Schaefer** (sidereal) and **Jean Meeus** (synod – the exactly calculations).

The following system settings are necessary for the right function of the program:

- Date: **TT.MM.JJJJ** or **T.M.JJJJ** (German Date form)
- Date hyphen: **always use the point "."**
- Type-size: **96 dpi** (is the normal setting in Windows)
- JavaScript: **must be put** in the **options** of the **MS-Internet-Explorers** *

Importantly - an Internet connection for the program is no more necessary from the version 1.0.6 build 6.0.002-1 from the 22nd December, 2009.

*) On the click of the button " Moon-zodiac sign " indicated windows as well as the other program points callable from there are based in the background on the files of the Internet Explorer MS and its options. Except JavaScript the type-sizes of these representations can be also influenced.

1. Theoretical calculation expiry (after Bradley):

In this theory the calculation of the phases of the moon is carried out from the point of the fixed stars.

Besides, it's an advantage that the relation can be looked between earth and moon regardless of the seasonal variations. Therefore, the calculation cannot use the sun days known by us and moon days, because they are defined by the rotation of both heavenly bodies around each other – unterseparate therefore from day to day easily.

Instead, these both heavenly bodies are looked from the point of the **Fixed Stars**.

One calls such calculations in the **English** usage as **sidereal** (in the **German: siderisch**).

A sidereal earth orbit has basically a duration – regardless of seasons and position of both heavenly bodies to each other – from exactly **23 hours, 56 minutes and 4.1 seconds**.

Also the astronomical rotation of the moon around the earth can be calculated with this procedure in which one looks at the intersection of the moon with to the earth orbit and works out, how long it lasts, until the moon reaches the same intersection again.

A steady value which is called in the English usage the **Draconic phase** (draconian phase) concerns it besides a period it of **exactly 27.212220 days** – again.

To the calculation the CET is used basically (the summertime is not considered).

2. Theoretical calculation expiry after Jean Meeus.

These results are determined after the known astronomical principles of the short calculation theory " of astronomical algorithms " by Jean Meeus (published by Johann Ambrosius Barth in Leipzig, Berlin, Heidelberg - 2-nd edition in 1994) – and with it the basis to the regulation of the single phases of the moon as well as the moon flow by the single moon-star-sign (a moon-zodiac-sign-segment amounts exactly to 30°. The names of the moon-star-signs agree with the sun-star-sign-names. Only its flow again a whole year takes up. The phases of the moon calculated with this special short theory as well as the moon-zodiac-signs (also as a moon-sign of the zodiac famously) are suitable seconds-exactly calculations and with it for the astronomical and also astrological wide use very well.

With this calculation method becomes the " Central European – Summertime " with heed.

Program description of the phase of the moon calculation:

Under these conditions you are to be calculated with this program in the position all moon phases between **1900** and **2100** – after the sidereal calculation method of Bradley E. Schaefer – in the start window.

In addition, you can see in the star window of the program the sun-zodiac-signs and its validity period to the given calendar date.

An other improvement to the present versions.

Importantly - the program starts basically with the topical calendar date, the today.

Besides are determined in a specially overview window all full phases of the moon and new phases of the moon as well as both half moon phases (waning and waxing). **These data can be printed out on a 'German Institute for Standardization' A4-page.** With it you can transferred these data very easily in self-made annual calendars or in others for you important documents.

Because in the graphic representation of the phases of the moon the minor deviations of not exactly 24 hours of durable earth day can be indicated, the new phase of the moon from time to time, in two calendar dates shown (calculation correction) becomes certain times. This often enters when the time of the new phase of the moon begins during the very late or very early hours of the new moon day or appears from the point of the fixed stars so.

This is the reason, which is why an other astronomical use of this sidereal results (missing hourly data of the beginning of all phases) only cause for astronomical wide uses is to be recommended.

For the use in annual calendar as well as for astrological statements are this results, nevertheless, relatively very precise and expressive values.

The precise phases of the moon (synod calculation) from the point of the earth as well as the topical moon-zodiac-signs are indicated after the click on the badge " Moon-zodiac-signs ".

Here you find the results of the topical phase of the moon as well as the next exact date of four most important main phases of the moon (new moon, waxing quarder, full moon and waning quarder).

Furthermore the calendar moon-star-signs and their change is indicated to the next moon-star-sign or is calculated.

In addition, you find out some tips to the single moon-zodiac-signs.

More than three button in the above button strip of this program window you can find out about the full moon names of 12 months of one year, about some historical backgrounds concerning the moon as well as the moon orbit around the earth.

All this informations is from the point of the earth the exact, astronomical, seconds-precise results.

Both calculation methods in a program are united a sensible combination of the approaches to the calculation of this quite special, cosmic expiry.

Besides **all moon eclipse** appointments are available to you **for 1987 to March 2043** for Central Europe (CET) – **if desired, on a German Institute for Standardization A4-page printable out.** Possible moon eclipses taking place in the calendar year are shown "white" on "black" background.

The precise beginning and the end of these events – please, do you take at this time from the medias (press, broadcasting companys, televisions a.s.o.).