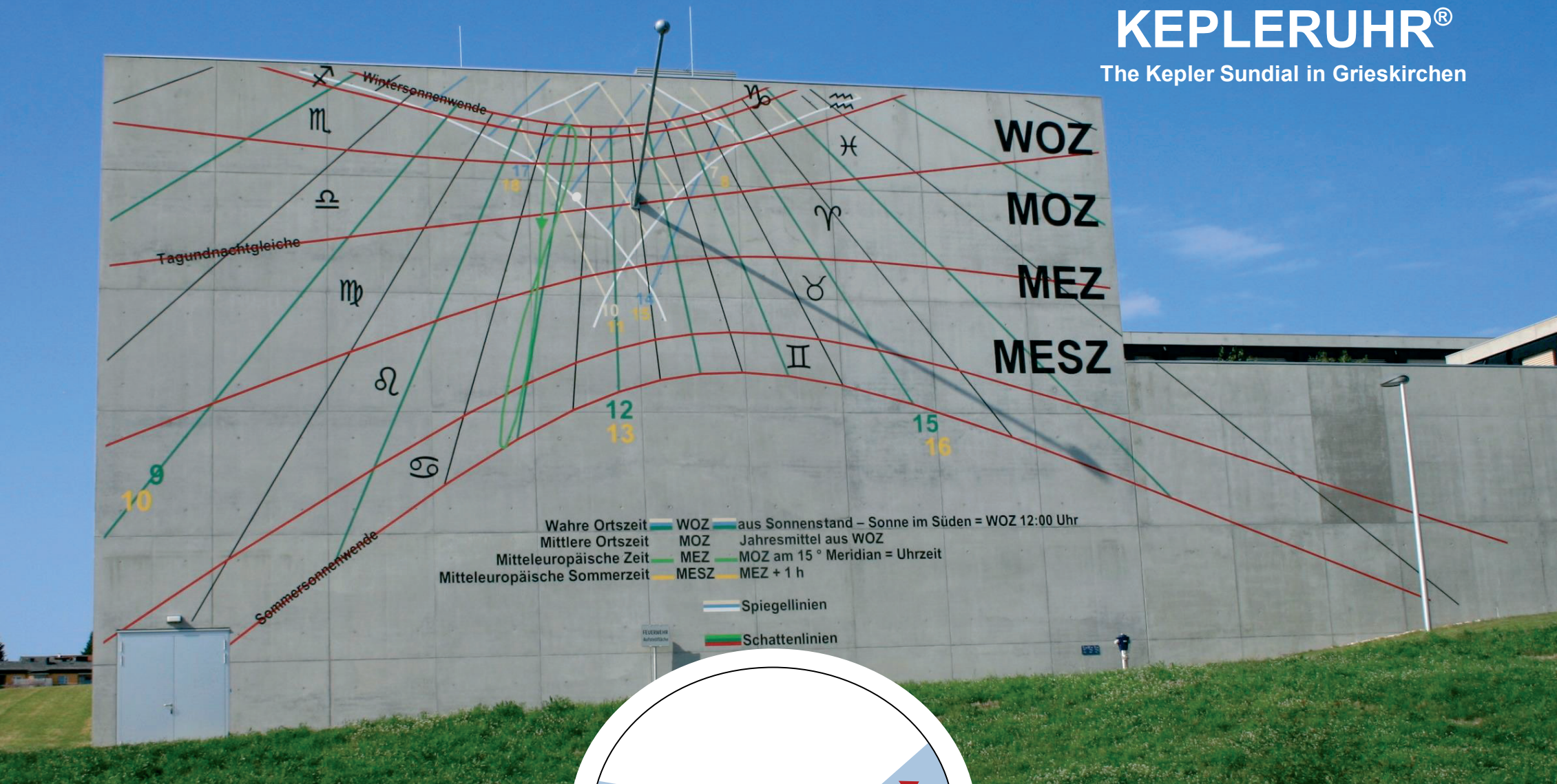


KEPLERUHR®

The Kepler Sundial in Grieskirchen



Neues Schulzentrum Grieskirchen
 South wall west
 Parzer Schulstraße 1
 4710 Grieskirchen

N 48° 14' 06,7" - O 13° 50' 01,3"

Earth orbit = ellipse → length of solar days varies



<http://kepleruhr.eu>

WOZ = LAT Local Apparent Time

- The solar time based on the local position.
- When the sun lies due south it is LAT 12:00 hours.
- LAT 12:00 hours in Grieskirchen is 1 min 27 sec later than in Linz.

MOZ = LMT Local Mean Time

- The solar days (LAT 12:00 hours until the next 12:00) vary in length over a year.
- The mean solar time across one year.

MEZ = CET Central European Time

- The local mean time at the 15 ° meridian (e.g. Gmünd/NÖ).

MESZ = CEST Central European Summer Time

- In the summer months 1 h is added to the CET.

GNOMON / NODUS – Shadow-casting object

- Beam with sphere.

ANALEMMA – „Figure eight“

- Shows deviation LAT to CET (and LMT).

IDEA – Why KEPLERUHR

GRIESKIRCHEN

- Agricultural character
- Nature / growth / observe weather conditions, seasons
- School building / education / dissemination of knowledge / observation practice/training

SUNDIAL

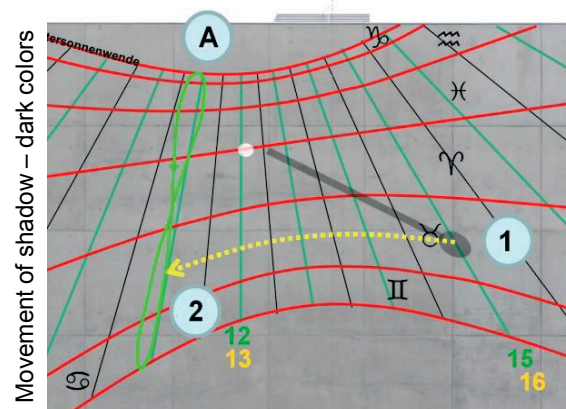
- Measurement of time for synchronizing comprehensive tasks

JOHANNES KEPLER

- Mathematician, astronomer, astrologer, optometrist, theologian
- Realized and formulated principles of movement of orbits of planets (ellipsoidal orbit of earth around the sun)
- Lived as a provincial mathematician in Linz at the time Grieskirchen received grant privileges of a town (9th February 1613) / married in October 1613 a woman of Eferding
- Probably celebrated the grant privileges as a member of the provincial government with the first mayor of Grieskirchen, Christoph Manglbürger, in his inn (now Stadtplatz 4, “Gasthof Zweimüller”)
- Beginning of the age of natural science: awareness by observation / modelling / fitting/falsification of the model of reality.

The largest vertical flat all-day sundial in Austria (at least)
240 m² / side mirrors at Nodus (movement of reflection while wall is within shadow) / slot within Nodus (accurate reading of LAT 12:00 hours)

For one day the shadow of the Nodus moves on a day-line (red) from left to right across the wall – according to the season at low sun altitudes in winter at the top and at high sun altitudes in summer at the bottom → reading of the signs of the zodiac. At full (half) hours the green (black) hour-lines are crossed → reading of the time. The deviation of the clock time (CET, CEST) from the solar time (LAT) is visible for each day at the hour-line 11:00 hours: most of the year the shadow reaches the bright green Analemma (CET, CEST) earlier than the straight hour-line (LAT) – in February the clock time is up to 19 min earlier than the solar time, in November up to 11 min later.



Reading of the time – movement of shadow

- ① At which hour-line (green or black for ½ h) is the shadow of the sphere positioned? → current **LAT**
- here: **LAT is 15:00 hours** (but: because of summer time (about 10th May) CEST is about 16:00 hours)
- ② What is the deviation regarding Analemma **A** for the current date: **CET = LAT – Analemma?**
- here: **CET is 15:01 hours**, because deviation = -1 min (and **CEST is 16:01 hours**)
- Analemma left beside the 11 hour-line → negative deviation; **CET is ahead LAT**.

Reading of signs of the zodiac – movement of shadow

- Within which region of the day-line (red) is the shadow: sign of zodiac?
- here: **Taurus** (first half year) or **Leo** (second half year).

During one day the reflection moves in between the white day-lines from right to left and crosses at full hours in the morning (evening) the yellow (blue) hour-lines.

Reading of time – movement of reflection

- ① At which hour-line (yellow for morning or blue for evening) is the reflection? → actual **LAT**
- here : **LAT is 15:00 hours** (but: because of summer time (about 10th May) CEST is about 16:00 hours).
For reading of deviation accordingly Analemma see **movement of shadow**.

Zodiac sign	Period	Symbol
Aries	21.3. – 20.4.	♈
Taurus	21.4. – 20.5.	♉
Gemini	21.5. – 21.6.	♊
Cancer	22.6. – 22.7.	♋
Leo	23.7. – 23.8.	♌
Virgo	24.8. – 23.9.	♍
Libra	24.9. – 23.10.	♎
Scorpio	24.10. – 22.11.	♏
Sagittarius	23.11. – 21.12.	♐
Capricorn	22.12. – 20.1.	♑
Aquarius	21.1. – 19.2.	♒
Pisces	20.2. – 20.3.	♓

Valid for 2015; boundaries slightly differ annually.