

**The 37<sup>th</sup> European Symposium on Occultation Projects**

# **ESOP XXXVII**

**2018 AUGUST 24<sup>th</sup>–29<sup>th</sup>  
ROKYCANY – PLZEŇ  
CZECH REPUBLIC**

**Full Programme of Symposium**

**Proceedings of Abstracts**

**List of ESOP Participants**

**Maps & Useful information**



The 37th European Symposium on Occultation Projects  
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*Note: Abstracts have not been edited and reviewed.*

# Conference Programme

## Friday

**24<sup>th</sup> August 2018**

*Location: Observatory in Rokycany, Voldušká 721*

16:00 – 20:00      Registration Desk Opens

19:00 – 22:00      Barbecue, snacks and drinks

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## Saturday

**25<sup>th</sup> August 2018**

07:00 –              Breakfast for hotel guests in Hotel Corso & Hotel Bílý Lev

07:30 –              Breakfast for hotel guests in Penzion No. 1

*Location: Conference Room Triana, Masarykovo náměstí 1*

08:00 – 11:00      Registration Desk Opens

*Location: Triana*

*Chairman: Jan Mánek*

09:00 – 09:30      Opening Ceremony

**Atila Poro** (President of IOTA-ME, via Skype)

**Konrad Guhl** (President of IOTA/ES)

**Václav Kočí** (Mayor of Rokycany)

**Karel Halíř** (Director of Rokycany & Plzen Observatory)

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## Lectures 1: Video cameras

*Chairman: Alex Pratt*

*Location: Conference Room Triana, Masarykovo náměstí 1*

*Helpdesk: Jan Mánek*

09:30 – 10:00      **Hristo Pavlov**  
Astro Analogue Video (AAV)

10:05 – 10:25      **Carles Schnabel**  
Comparison of the performance of five cameras

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10:30 – 11:00      Coffee break

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**Lectures 2: Observation results I***Chairman: Konrad Guhl**Location: Conference Room Triana, Masarykovo náměstí 1**Helpdesk: Ota Kéhar*

- 11:00 – 11:20      **Wolfgang Beisker**  
The Triton Occultation of 2017  
The Campaign – The Light curves – First Results
- 11:25 – 11:50      **Bernd Gährken**  
386-Siegena & 25-Phocae – 2 Observations in 24 hours
- 11:55 – 12:15      **Djounaï Baba Aïssa**  
Observation campaign of several stellar occultation by asteroids with low probability in Algeria
- 12:20 – 12:30      **Jan Mánek**  
Experience with high-speed video recording on small telescope

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*Location: Primary school T. G. Masaryk, Třebízského 32**Helpdesk: Jan Mánek*

- 12:30 – 14:30      **Lunch** for Conference participants

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**Lectures 3: Binary asteroids & Solar eclipse***Chairman: Jan Mánek**Location: Conference Room Triana, Masarykovo náměstí 1**Helpdesk: Ota Kéhar*

- 14:30 – 15:30      **Ota Kéhar**      / invited lecture /  
How to use Real data from Catalogues  
of Astronomical objects (not only) in Education
- 15:40 – 16:00      **Konrad Guhl, Andreas Tegtmeyer**  
Baily's Bead Observations during the Total Solar Eclipse 2017 August 21

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- 16:00 – 16:30      Coffee break

\* \* \* \* \*

*Location: Conference Room Triana, Masarykovo náměstí 1**Helpdesk: Jan Mánek*

- 16:30 – 18:30      **IOTA/ES General Assembly**

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*Location: Restaurant CORSO, Palackého 175**Helpdesk: Jan Mánek*

- 19:00 – 22:30      **Social Dinner** for All participants

**Sunday****26<sup>th</sup> August 2018**

07:00 – Breakfast for hotel guests in Hotel Corso & Hotel Bílý Lev  
 07:30 – Breakfast for hotel guests in Penzion No. 1

**Lectures 5: Observation results II***Chairman: Eberhard Riedel**Location: Conference Room Triana, Masarykovo náměstí 1**Helpdesk: Jan Mánek*

08:50 – 09:10 **Alex Pratt**  
Results from participating in PHEMU15

09:15 – 09:45 **Björn Kattentidt**  
300 occultations during two years at new K71 observatory – experiences and results

09:50 – 10:10 **Konrad Guhl**  
Observation of Total Lunar Occultation during lunar eclipses 1986, 2015 and 2018

10:15 – 10:30 **Jiří Kubánek**  
Observation of occultations in Czechia and sets for observations

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10:30 – 11:00 Coffee break

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**Lectures 6: Software***Chairman: Oliver Klös**Location: Conference Room Triana, Masarykovo náměstí 1**Helpdesk: Ota Kéhar*

11:00 – 11:20 **Nikolai Wuensche**  
Computer time setting via NTP with Meinberg software

11:25 – 11:55 **Eberhard Riedel**  
GRAZPREP – Still new features

12:00 – 12:20 **Andreas Eberle**  
Guide-Plugin for OccultWatcher

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*Location: square Masarykovo náměstí close to fountain**Helpdesk: Jan Mánek*

12:20 – 12:30 **Common photography** of ESOP 37 participants

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*Location: Primary school T. G. Masaryk, Třebízského 32*

*Helpdesk: Jan Mánek*

12:30 – 14:30      **Lunch** for Conference participants

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## **Lectures 7: Observation results III**

*Chairman: Carles Schnabel*

*Location: Conference Room Triana*

*Helpdesk: Ota Kéhar*

14:30 – 14:50      **Wojciech Burzyński**  
Highlights of occultation observations in Poland 2018

14:55 – 15:15      **Atila Poro** / via Skype /  
Introducing RO3 Project

15:20 – 15:35      **Tim Haymes**  
UK observations in 2018: successes, new CCD users, and a lunar graze

15:40 – 16:00      **Bruno Sicardy** / via Skype /  
The Triton stellar occultation of October 5, 2017 in the Gaia era

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16:00 – 16:30      Coffee break

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## **Lectures 8: Occultation future**

*Chairman: Andreas Tegtmeyer*

*Location: Conference Room Triana*

*Helpdesk: Jan Mánek*

16:30 – 16:45      **Oliver Klös**  
Occultations by Asteroids – Highlights for Europe in 2019

16:50 – 17:20      **Eberhard Bredner**  
IOTA/ES basic observations with a small telescope

17:25 – 17:35      **Jan Mánek**  
First solar eclipse canons and Franz Ignatz Cassian Hallaschka

17:40 – 17:50      **Bruno Sicardy** / via Skype /  
Invitation to ESOP 38 in Paris, France

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*Location: Conference Room Triana*

*Chairman: Jan Mánek*

17:50 – 18:00      **Closing Ceremony**

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19:00 – open end    Drink at pubs in Rokycany, dinner on individual basis

# “Ladies” Programme

## Saturday

**25<sup>th</sup> August 2018**

07:00 – Breakfast for hotel guests in Hotel Corso & Hotel Bílý Lev

07:30 – Breakfast for hotel guests in Penzion No. 1

08:30 Rokycany, parking place “Havlíčková”

*Location: Plzen*

*Helpdesk: Alena Halířová*

09:00 – 17:30 **ZOO Plzen**

*Note: Gate-money to ZOO Plzen and travelling expenses are already covered by registration fee. There is not planning to have organized Saturday lunch, but inside zoo, there are several options:*

- *Restaurant Kiboko (in Swahili Hippopotamus; better name should be cafeteria) is located behind shop with souvenir close to Madagascar building, food is like fast-food style.*
- *Siberian log house is located close to tiger area, there is outside terraces and inner seating. Food (cold and warm) are also like fast-food style.*
- *Restaurant Lüftnerka is in the farm with the same name in the north part of zoo. Food are typical Czech kitchen.*
- *Refreshment in Tropical building is located close to building with reptiles, monkeys; they offer typical cold and warm fast food.*

18:00 Rokycany, parking place “Havlíčková”

*Location: Restaurant CORSO, Palackého 175*

*Helpdesk: Jan Mánek*

19:00 – 22:30 Social Dinner for All participants

## Sunday

**26<sup>th</sup> August 2018**

07:00 – Breakfast for hotel guests in Hotel Corso & Hotel Bílý Lev

07:30 – Breakfast for hotel guests in Penzion No. 1

09:00 Rokycany, square Masarykovo náměstí close to fountain

*Location: Rokycany*

*Helpdesk: Alena Halířová*

09:00 – 17:00 **Rokycany**

(Museum of Dr. Bohuslav Horák, park U Plzeňské brány, Rokycany hillside, baroque fountain and Marian Column on Masaryk square, lookout tower on hill Kotel – 1 km by walk from parking place with gradient 200 m etc.)

*Note: Gate-money to museum, tower etc. and travelling expenses are already covered by registration fee. There is not planning to have organized Sunday lunch, but Rokycany close to city centre offers several options:*

- *Restaurace No. 1, street Jiráskova 1*
- *Restaurace Corso, street Palackého 175*
- *Restaurace Vignetta, street Dolní příkopy 62*

17:00 Rokycany, square Masarykovo náměstí close to fountain

17:40 It is possible to visit Conference Room Triana for Invitation to ESOP 38 & Closing Ceremony, see page 4

# Excursion Programme

## Monday

27<sup>th</sup> August 2018

07:00 – Breakfast for hotel guests in Hotel Corso & Bílý Lev & Penzion No. 1

08:00 Rokycany, parking place “Havlíčková”

*Location: Bečov nad Teplou & Karlovy Vary*

*Helpdesk: Alena Halířová*

09:30 – 11:00 **Bečov nad Teplou Castle**

12:00 – 16:30 **Karlovy Vary spa town**

Common lunch in **Pilsner Urquell Original Restaurant Národ'ák**  
www.narodak.eu

street T.G. Masaryka 1088/24, Karlovy Vary

*Note: Word “Národ'ák” [na:ɾja:k] means colloquially and in slang in sport terminology “national representation team”.*

18:00 Rokycany, parking place “Havlíčková”

19:00 – open end Drink at pubs in Rokycany, dinner on individual basis

## Tuesday

28<sup>th</sup> August 2018

07:00 – Breakfast for hotel guests in Hotel Corso & Bílý Lev & Penzion No. 1

08:00 Rokycany, parking place “Havlíčková”

*Location: Kozel Castle, Plzen*

*Helpdesk: Alena Halířová*

08:30 – 10:00 **Kozel Castle**

11:00 – 16:30 **Plzen**

Common lunch in **Restaurant Slunečnice**

www.slunecniceplzen.cz

street Jungmannova 4, Plzen

*Note: Word “Slunečnice” [slunɛtʃnɪtsɛ] means “sunflower” in Czech.*

17:00 Rokycany, parking place “Havlíčková”

18:00 – open end Drink at pubs in Rokycany, dinner on individual basis

# Abstracts

**Djounaï Baba Aïssa<sup>1)</sup>, Toufik Abdelatif<sup>1)</sup>, Zaki Grigahcene<sup>1)</sup>, Hamid Sadsaoud<sup>1)</sup>, Abderrezak Guessoum<sup>2)</sup>**

*1) Algeria: Center of Research in Astronomy, Astrophysics and Geophysics*

*2) Algeria: Saad Dahleb University (Blida1) – Electronic Department*

## **Observation campaign of several stellar occultations by asteroids with low probability in Algeria**

The low probability of stellar occultation by asteroids are due to the small sizes of the celestial occulting bodies as Near Earth Objects.

In fact, there is a significant risk that these NEOs could collide with our planet as in 1908 (Tunguska – Siberia) and in 2013 (Chelyabinsk – Russia) that is why it is interesting to study them by this observation method which allows to characterize their dimensions and their shapes.

In this way, an observation campaign of a few occultations, using the 80 centimeters telescope of Algiers Observatory (CRAAG) coupled with 910 HX Video Camera and IOTA VTI inserter, was carried out during the first half of 2018. The aim is to observe positively, in the future, stellar occultations by NEOs with a diameter greater than 5 kilometers.



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**Wolfgang Beisker**

*Germany: International Occultation Timing Association – European Section*

**The Triton Occultation of 2017****The Campaign – The Lightcurves – First Results**

One of the most spectacular occultations in 2017 was the occultation of UCAC4 410-143659 with a magnitude of 12<sup>m</sup>4 by Triton in the night of the 5<sup>th</sup> and 6<sup>th</sup> of October 2017. Because of the availability of the Gaia position of the star a very precise positioning of observers was possible. More than 60 observing stations throughout Europe and around, including the SOFIA airplane were gathering data, many observers were close to the central line and observed a large central flash with a light intensity of up to nearly 5 times the intensity of the star.

A first overview is given in this report, because of the large number of lightcurves, a final analysis is expected to take considerably more time.

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**Eberhard Bredner**

*Germany: International Occultation Timing Association – European Section*

**IOTA/ES basic observations with a small telescope**

Normally when preparing for an excursion to observe an occultation we try to take with us the largest equipment possible.

BUT when you are on holidays the possibilities are restricted. So if an occultation observation occurs during the holiday time one has to decide what equipment will be "enough".

For three weeks in France I had the chance to observe some basic events, total occultations, one grazing occultation and the occultation of a star by the minor planet 2326 Tololo.

I will give a report of my completely personally holiday practical knowledge.

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**Wojciech Burzyński**

*Poland: International Occultation Timing Association – European Section*

**Highlights of occultation observations in Poland 2018**

The lecture presents the results of observations of the most spectacular occultation events recorded this year in Poland including numerous faint star lunar occultations, grazing lunar occultations and detection of new double star from asteroidal occultation.

\* \* \* \* \*

**Andreas Eberle**

Germany: Sternwarte Stuttgart

**Guide-Plugin for OccultWatcher**

For many years now, OccultWatcher is the essential software for planing observations and coordinating observers along the shadow path. The flexible software structure allows to adjoin plug-ins with additional functionality. This is a presentation of such a plug-in, allowing to start the planetarium-software 'Guide' directly from OccultWatcher.

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**Bernd Gährken**

Germany: Bavarian Public Observatory

**386-Siegena & 25-Phocae – 2 Observations in 24 hours**

At ESOP 2016 Eberhard Bredner showed his mobile equipment.  
An inspiration for me to find a compareable solution.  
The speach shows the result and the first positive observation.

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**Konrad Guhl<sup>1)</sup>, Andreas Tegtmeier<sup>2)</sup>**

1) Germany: International Occultation Timing Associaton – European Section; Archenhold-Sternwarte

2) Germany: International Occultation Timing Associaton – European Section

**Baily Bead Observation during the eclipse 2017 August 21**

Measuring the angular solar diameter and calculating the real diameter, taking into account the Earth–Sun distance, has been a fundamental challenge for astronomers for more than two thousand years. After micrometer, heliometer or transit measurements, astronomers found one of the best ground-based methods for finding the solar diameter: The observation of the disappearance and reappearance of the remaining sunlight in the valleys on the lunar limb during total or annular solar eclipses. Due to the fact that Francis Baily (1774–1844) was one of the first who described the tiny points of light on the lunar edge during a total eclipse, the technique was named Baily's Beads observation. Such observations have been a focus of activity of IOTA and IOTA-ES for many years. The aim was a measurement of the solar diameter and detection of possible variations.

In 2017, IOTA-ES organized an expedition to the edges of a total solar eclipse (TSE) on August 21, where bead observation is possible. The lecture present observation results and an outlook for the eclipse 2019.

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**Konrad Guhl**

*Germany: International Occultation Timing Association – European Section; Archenhold-Sternwarte*

**Observation of Total Lunar Occultation during lunar eclipses 1986, 2015 and 2018**

During a total lunar eclipse the brightness of the moon is reduced and the observation of total lunar occultation is possible. First observations the author made during the eclipse Oct. 17, 1986, as visual observation. During the eclipse September 2015 some observations were made with a Watec camera on a 180/1800mm telescope. These observations are reported to IOTA. For the eclipse 2018 also such observation were planned and were tried to execute.

Results and obstacles will be shown in the lecture.

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**Tim Haymes**

*United Kingdom: British Astronomical Association; International Occultation Timing Association – European Section*

**UK observations in 2018: successes, new CCD users, and a lunar graze**

I will summarise observations made by UK observers in the last year and include some contributions made by new observers with USB cameras. The presentation will be illustrated by asteroid and lunar examples, and I will finish with an historical investigation into a previously unreported lunar graze.

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**Björn Kattentidt**

*Germany: International Occultation Timing Association – European Section*

**300 occultations during two years at new K71 observatory – experiences and results**

Focus is on selection criteria to plan observing an occultation based on data given by Occultwatcher. Short videos of the 9 positive occultations show how different occultations may occur.

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**Ota Kéhar**

*Czechia: Czech Astronomical Society, European Astronomical Society, Union of Czech Mathematicians and Physicists*

**How to use Real data from Catalogues of Astronomical objects (not only) in Education**

Catalogues of astronomical objects have a long tradition; the first reference can be found tens of years BC. Currently they have a fundamental role in space discovery. In the internet age they are available online in updated form, making them easy to browse or search according to various criteria. In the original format, however, are very limited in usage in education because pupils are boring uninteresting data in the tables. Their attractive utilization in schools will be described during this lecture. Online applications available via Internet browser on [astronomia.zcu.cz](http://astronomia.zcu.cz) are using catalogues of astronomical objects (stars, minor planets, deep-sky objects and exoplanets).

\* \* \* \* \*

**Oliver Klös**

*Germany: International Occultation Timing Association – European Section*

**Occultations by Asteroids – Highlights for Europe in 2019**

In June 2018 Steve Preston (IOTA) provided the first predictions of occultations by asteroids in the year 2019. This presentation with path maps will give a first look on some of the highlights, which will cross Europe.

The first part of the presentation shows some occultations of bright stars. Because the uncertainties of the path predictions of bright events are sometimes large, a wide distribution of stations is needed. Bright star events are good opportunities to promote occultation observations in the astronomy community too.

The second part presents path predictions for minor planets with satellites. Video cameras with high frame rates give us the chance to observe even these small objects, which will improve the orbits of these companions.

Especially occultations by the minor planet (87) Sylvia and their moons Romulus and Remus are in focus in 2019.

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**Jiří Kubánek**

*Czechia: International Occultation Timing Association – European Section; Czech Astronomical Society*

**Observation of occultations in Czechia and sets for observations**

Observations of occultations in Czechia have a long tradition. Visually observations of total lunar occultations were substituted by observations of occultations by minor planets by objective methods. Purchase of sets for observations increased number of them.

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**Jan Mánek**

*Czechia: International Occultation Timing Association – European Section; Czech Astronomical Society*

**Experience with high-speed video recording on small telescope**

During last four years I have recorded about 50 total occultations with frame rates 100/fps or higher with two different digital cameras (QHY5L-II-M and ASI174MM) mounted on 20cm telescope. Short outline of time linking, resulting curves and usability will be given.

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**Jan Mánek**

*Czechia: International Occultation Timing Association – European Section; Czech Astronomical Society*

**First solar eclipse canons and Franz Ignatz Cassian Hallaschka**

While "Canon der Finsternisse" by Theodor von Oppolzer (1841-1886) from 1887 is well known worldwide, his work was preceded by two smaller canons computed by F.I.C. Hallaschka (1780–1847) and printed in 1816 and 1820. Although they cannot be compared with Oppolzer's work by number of included eclipses, they surely were highly appreciate at their time and were one of first of their kind. A short account on both – Hallaschka and his two canons – will be given.

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**Hristo Pavlov**

*Australia: International Occultation Timing Association – European Section*

**Astro Analogue Video (AAV)**

The Astro Analogue Video (AAV) file format was created to accommodate the needs of video observers using integrating analogue video cameras. In this talk I will examine in detail the purpose of AAV and discuss how it helps video observers. I will also discuss how the free software for Windows OccuRec can be used optimally to record in AAV format. I will also discuss how other programs can write and read AAV files.

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**Atila Poro**

*Iran: International Occultation Timing Association / Middle East*

**Introducing RO3 Project**

This is one of the IOTA/ME's projects on observing Occultations that will be introduced for the first time in this workshop.

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**Alex Pratt**

*United Kingdom: International Occultation Timing Association – European Section*

**Results from participating in PHEMU15**

I took part in the PHEMU15 campaign to make photometric observations of the mutual phenomena of Jupiter's Galilean satellites during 2014–2015. I submitted data on 18 events and 17 were used for the PHEMU15 report.

This presentation discusses the results from the PHEMU15 catalogue published by the IMCCE and Sternberg Astronomical Institute, and it summarises the observing prospects for PHEMU21.

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**Eberhard Riedel**

*Germany: International Occultation Timing Association – European Section*

**GRAZPREP – Still new features**

Since 2011 the 'GRAZPREP'-software serves an increasing number of grazing occultation observers as a tool to find information about all upcoming occultation events in their region as well as to precisely plan all necessary details of any event in advance to assure successful

observations. Even under way the software can be used on a mobile Windows-PC or tablet to directly visualize the occultation circumstances from any present location.

The presentation will explain some of the newer features and will give first impressions of a planetarium tool being optimized for lunar occultations. This add-on is going to be included in the software in the near future to also cover total stellar occultations by the moon or the major planets.

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## **Carles Schnabel**

*Spain: International Occultation Timing Association – European Section*

### **Comparison of the performance of five cameras**

The comparative performance of five cameras used in occultation observations will be showed and discussed. These cameras are Mintron 12V6HC-EX, Watec 120N+, Watec 910HX, PTG CM3-U3-13S2M and QHY174M-GPS.

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## **Bruno Sicardy**

*France: International Occultation Timing Association – European Section; Observatoire de Paris/LESIA and Université Paris Sorbonne*

### **The Triton stellar occultation of October 5, 2017 in the Gaia era**

On 5<sup>th</sup> October 2017, Triton, the biggest natural satellite of Neptune passed in front of a magnitude 12 star.

It is the only satellite, apart from Titan, to possess a bound atmosphere. This atmosphere is very similar to Pluto's, both in terms of pressure (about 15  $\mu$ bar at the surface), composition (main N<sub>2</sub>), physics and size. Contrarily to what happens on Earth, this atmosphere is controlled by the surface, with the gaseous and solid phases of N<sub>2</sub> being at vapor pressure equilibrium. Consequently, drastic seasonal effects are present on the satellite.

Stellar occultations by Triton are rare, the last favourable one occurred in 1997, and only in October 2017 was it possible to observe another occultation from several stations. The Gaia catalog DR1, plus a partial pre-release of DR2, greatly improved the predictions of the event. As a consequence, more than 80 stations could eventually record that event, mostly thanks to amateurs, and essentially concentrated in western Europe, with contributions from North Africa and Eastern USA.

We will present preliminary results, concerning in particular the evolution of Triton's atmosphere since the Voyager flyby of 1989, and its temperature and pressure profiles. Moreover, a spectacular central flash, recorded from 25 stations provide important insights on the shape of the atmosphere and possible presence of hazes.

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## **Nikolai Wuensche**

*Germany: International Occultation Timing Association – European Section*

### **Computer time setting via NTP with Meinberg software**

Occultation observers who are using cameras with a USB- or a FireWire-port, facing a new problem: The computer clock must be set very accurate to UTC.

In the talk a brief overview of possible methods is given.

One possibility for time synchronisation of computers is the Network Time Protocol.

Using a NTP client software, it's easy to synchronise the observer's computer within a few milliseconds to UTC.

With the Meinberg Time Monitor software the observer also gets detailed information about the current status of the synchronisation. An occultation observer can easily determine the offset of the computer clock at observation time and also gets information of the reliability of the synchronisation. The logging of all crucial information allows, to verify the time synchronisation in detail afterwards.

In the talk I give suggestions for the settings of the time monitor software and show how to extract information out of the logs.

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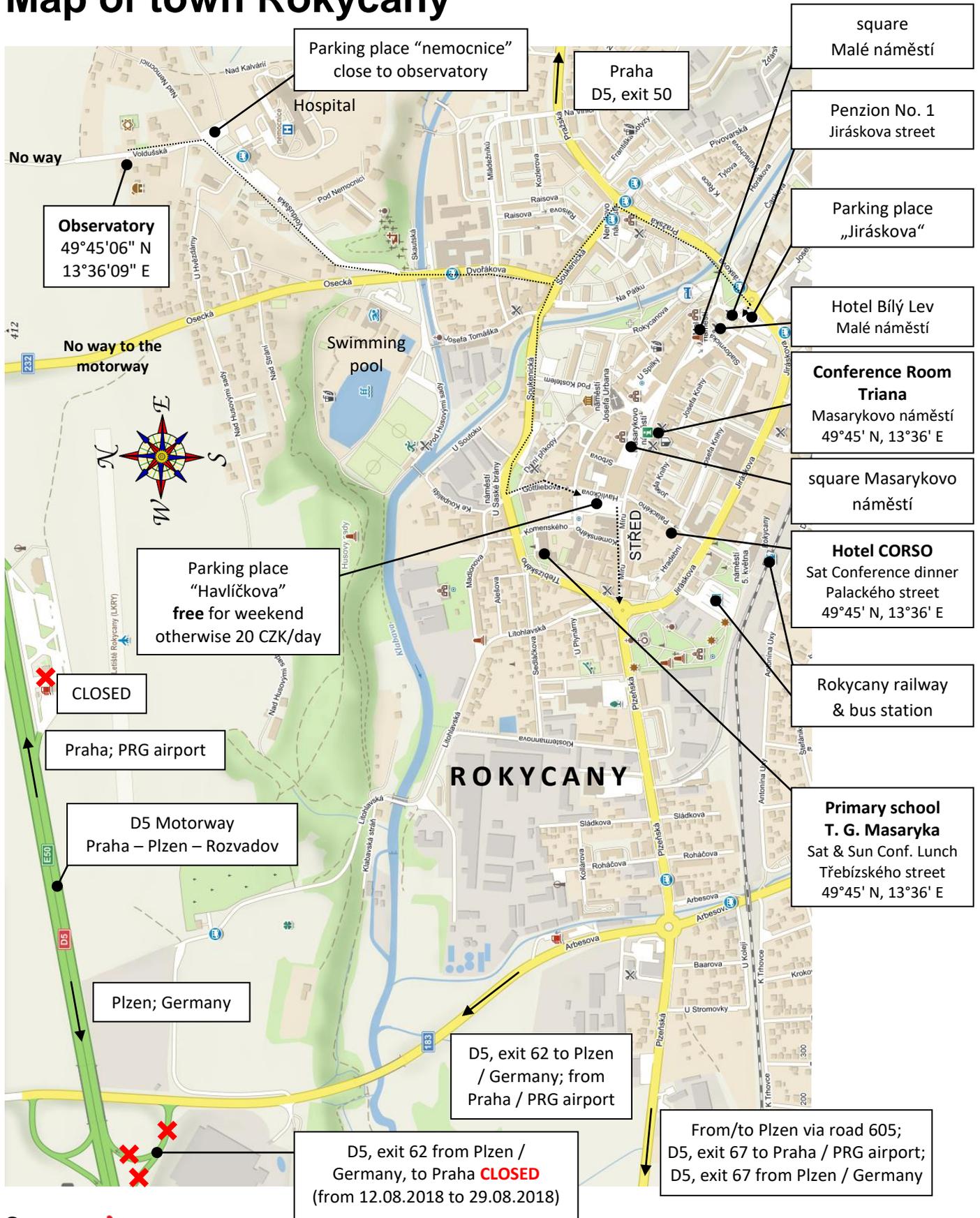
## List of Participants to 19<sup>th</sup> August 2018

Sven **ANDERSSON**, DE  
Djounaï **BABA AÏSSA**, DZ  
Wolfgang **BEISKER**, DE  
Anke **BITTNER**, GB \*  
Christoph **BITTNER**, GB  
Eberhard H. R. **BREDNER**, DE  
Tereza **BREJCHOVÁ**, CZ  
Wojciech **BURZYŃSKI**, PL  
Andreas **EBERLE**, DE  
Cordelia **EBERLE**, DE \*  
Chad **ELLINGTON**, US  
Leonard **ENTWISLE**, GB  
Bernd **GÄHRKEN**, DE  
Elke **GUHL**, DE \*  
Konrad **GUHL**, DE  
Karel **HALÍŘ**, CZ  
Alena **HALÍŘOVÁ**, CZ  
Martina **HAUPT**, DE  
Tim **HAYMES**, GB  
Charles **HEROLD**, US  
Tomáš **JANÍK**, CZ  
Björn **KATTENTIDT**, DE  
Ota **KÉHAR**, CZ  
Oliver **KLÖS**, DE  
Matěj **KOREC**, SK  
Roman **KOSTENKO**, UA  
Jiří **KUBÁNEK**, CZ

Peter **LINDNER**, DE  
Vladimíra **LUKEŠOVÁ**, CZ  
Jan **MÁNEK**, CZ  
Stefan **MEISTER**, CH  
Hristo **PAVLOV**, AU  
Atila **PORO**, IR  
Alex **PRATT**, GB  
Václav **PŘIBÁŇ**, CZ  
Eberhard **RIEDEL**, DE  
Gisela **ROTHE**, DE \*  
Wolfgang **ROTHE**, DE  
Antoni **SELVA DIAZ**, ES  
Frank **SCHAFFER**, DE  
Marianne **SCHAFFER**, DE \*  
Petr **SCHEIRICH**, CZ  
Renate **SCHENK**, DE \*  
Carles **SCHNABEL**, ES  
Bruno **SICARDY**, FR  
Andreas **TAZREITER**, AT  
Andreas **TEGTMEIER**, DE  
Carmen **TEGTMEIER**, DE \*  
Jan Maarten **WINKEL**, NL  
Annette **WUENSCHÉ**, DE \*  
Nikolai **WUENSCHÉ**, DE  
Petr **ZELENÝ**, CZ  
Barbora **ZÝKOVÁ**, CZ

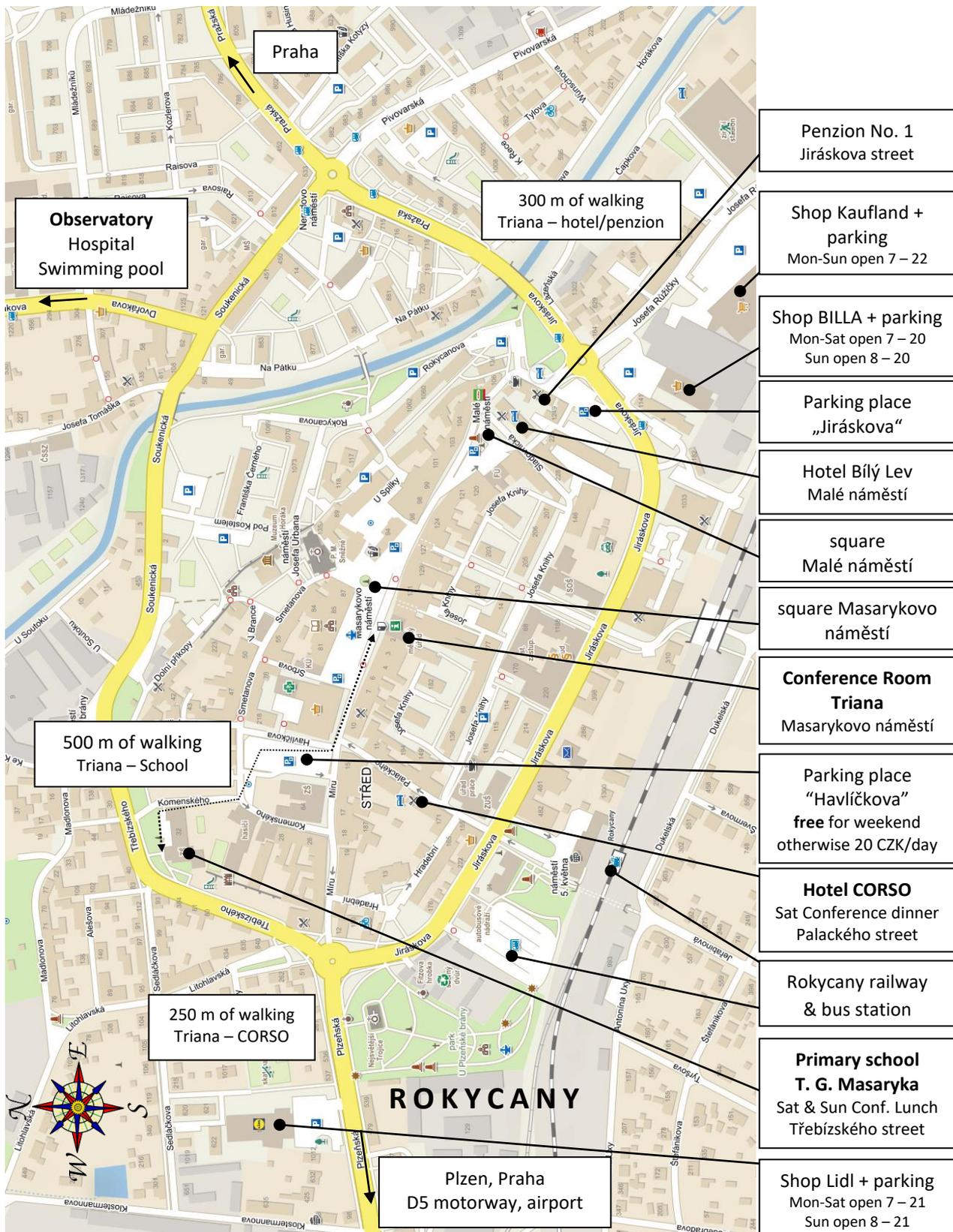
*Participant marked with asterisk are accompanying members*

# Map of town Rokycany



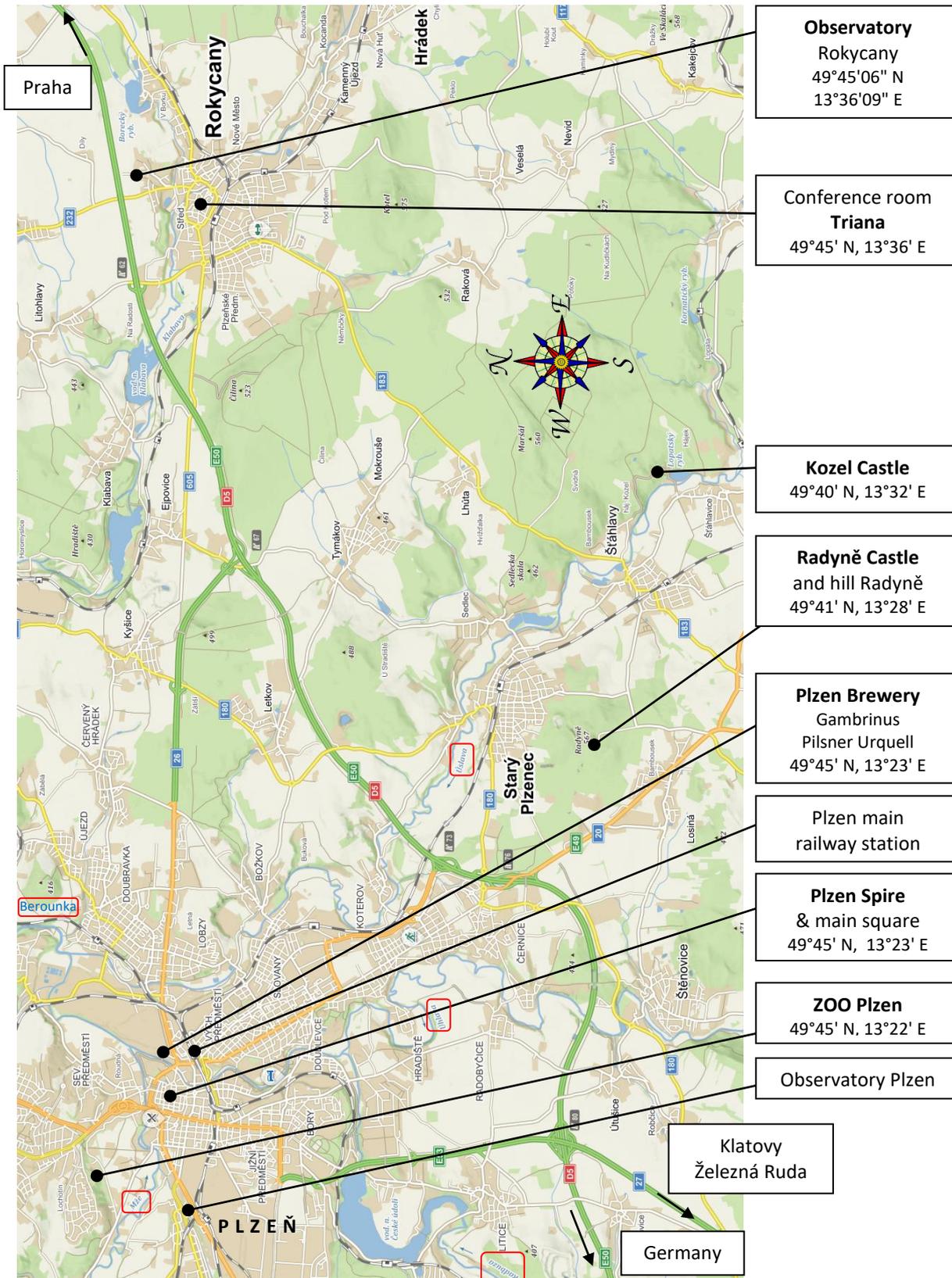
Source: **MAPY.CZ**

# Detail map of inner town Rokycany



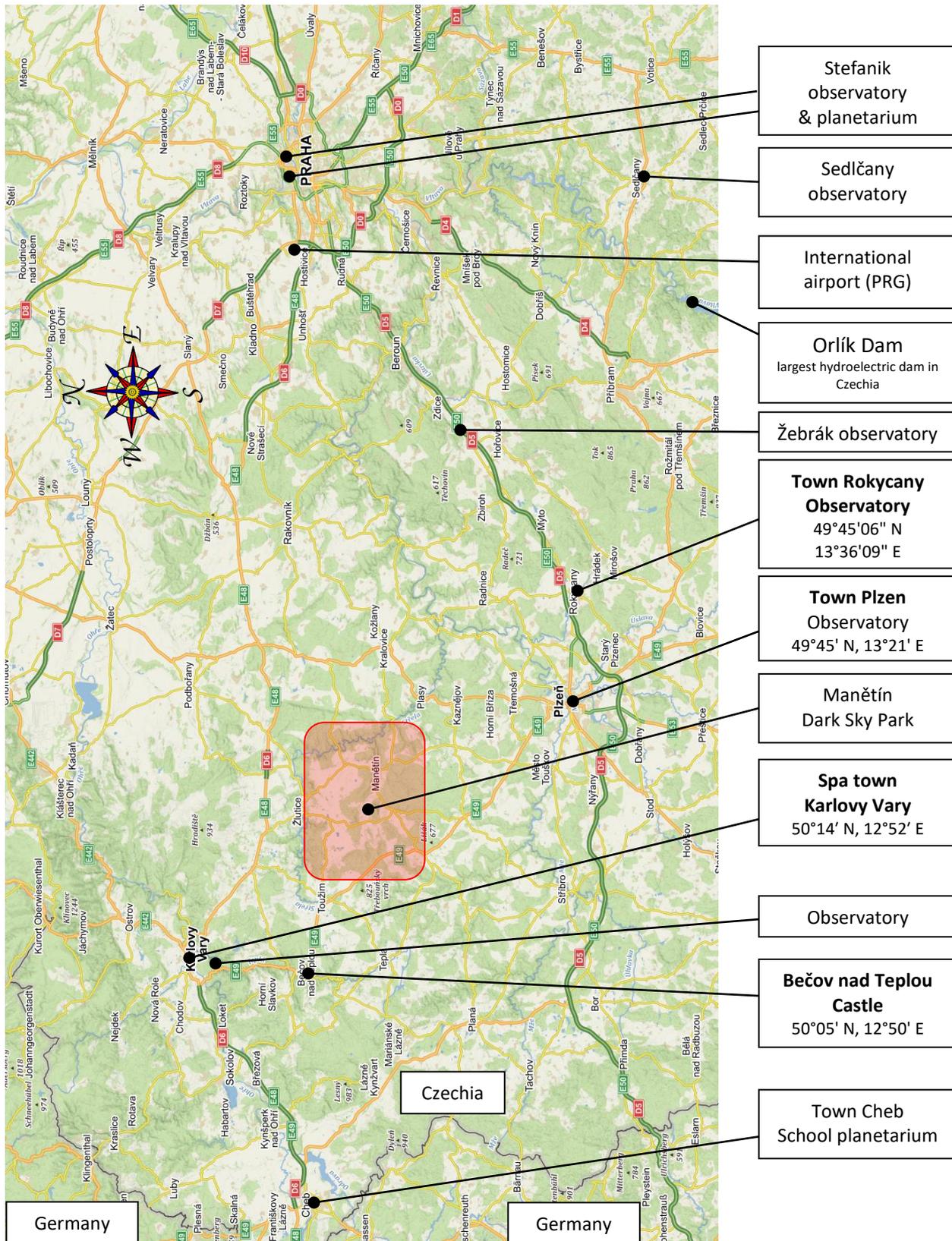
Source: **MAPPY.CZ**

# Map of Plzen & Rokycany



Source: **MAPPY.CZ**

# Map of West & Central Bohemian Part



Source: **MATY.CZ**

## About ...

### ... Rokycany & Plzen Observatory

Source: [hvr.cz](http://hvr.cz)

The Rokycany & Plzen observatory is independent organization. It was founded by the Plzen region on 1<sup>st</sup> July 2016 (as a merging of Observatory Rokycany and Observatory & planetarium Plzen) but originally (from historical point of view) it was founded in 1940s. Observatory Rokycany lies on the north edge of the Rokycany town at an altitude 400 metres, latitude 49° 45' and longitude 13° 36'. Observatory Plzen lies in quarter Skvrňany in Plzen town at an altitude 325 metres, latitude 49° 44' 37.3" and longitude 13° 20' 56.5".

The Rokycany observatory have several types of telescopes on disposal, beginning with portable apparatuses up to lenses of 15 or 20 centimetres in diameter. There is also installed 50.8 cm telescope. The attractions of the evening sky can be examined with assistance from staff at the observatory. Visitors will be able to see the moon, some of the planets and, naturally, also distant objects in the universe, such as double stars, star clusters, nebulae and galaxies.

Observatory main research activity is asteroid (or minor planet) occultation.

### ... Occultation & Astrometry Section of Czech Astronomical Society

Source: [hvr.cz/zakryty/zas/](http://hvr.cz/zakryty/zas/)

The section is one of the oldest scientific part of Czech Astronomical Society and associates members with interested in observing of occultations, astrometry and other related fields of astronomy. The section has head office in Rokycany Observatory, there is also annual session of section members called ZAROK. In cooperation with Rokycany Observatory magazine "Zákrytový zpravodaj" (only in Czech) is issued every month already from year 2003. Observation and expedition of Asteroid and Lunar Occultation are regularly organized.

### ... Town Rokycany

Source: [en.wikipedia.org/wiki/Rokycany](http://en.wikipedia.org/wiki/Rokycany), [rokycany.cz/EN](http://rokycany.cz/EN)

Rokycany (Czech pronunciation: [ˈrokɪtsanɪ]) is a town in the Plzen Region of the Czech Republic. It is 17 km east of the region capital Plzen on the confluence of the River Klabava and the Holoubkov Brook (Czech: Holoubkovský potok). The town is in the lowland, 362 metres above sea level, bordered by hilly woodlands, especially the Brdy mountains to the east and the Radeč massif. Rokycany is also the seat of the Municipality with Extended Competence and Municipality with Commissioned Local Authority. Rokycany was first mentioned in 1110. Rokycany is divided into four districts: "Střed" (Center), "Nové Město" (New Town), "Plzeňské předměstí" (Plzeň Suburb) and "Borek". The population of Rokycany currently stands below 15,000. Rokycany is located on the main railway and highway connecting Praha with Plzen. Object (15925) Rokycany (detail information including current location in orbit on web pages: [astronomia.zcu.cz/katalogy/minorplanet-15925](http://astronomia.zcu.cz/katalogy/minorplanet-15925)) is a main-belt minor planet named after Rokycany.

### ... Plzen Region

Source: [en.wikipedia.org/wiki/Plzeň\\_Region](http://en.wikipedia.org/wiki/Plzeň_Region)

Plzen Region (Czech: Plzeňský kraj; German: Pilsner Region) is an administrative unit (Czech: kraj) in the western part of Bohemia in the Czech Republic. It is named after its capital Plzen (English, German: Pilsen). In terms of area, Plzen region is 7,561 km<sup>2</sup>, the third

largest region in the Czech Republic. However, the population of 572,459 inhabitants (as of 31 December 2012) it is the ninth most populous region. More than 30 % of the inhabitants reside in Plzen, which is the fourth largest city in the Czech Republic with 167 thousand inhabitants. Plzen is the largest city in the region. There are 56 towns in the region, which account for 67 % of the total population. More than 30 % of the population lives in municipalities with less than 2000 inhabitants. The region can be roughly divided into two parts: a highly industrialized north-eastern part with a strong engineering tradition around Plzen (Czech: Plzeň) and a more hilly and rural southwestern part with smaller-sized manufacturing companies processing natural resources. The region was established based on the constitutional law in 1997.



The largest part of the region belongs to the drainage basin of Berounka River, the biggest left tributary of Vltava River. The southern part of the region belongs to the drainage basin of Otava River. The climate of the region is influenced by the western and southwestern winds from the Atlantic Ocean. The significant engineering company is Škoda Transportation group, Panasonic, Yazaki Wiring, Vishay Electronic, Borgers etc. Important food processing companies of the region are Pilsner Urquell Brewery (Czech: Plzeňský Prazdroj), which was established in 1843 and is the largest Czech beer exporter; Stock Plzen, the largest Czech producer of liquors; Bohemia Sekt Českomoravská vinařská, an important Czech producer of wines, based in Starý Plzenec. The main motorway in the region is the D5 motorway connecting Plzen with Praha and Germany. The region is attractive for tourists. Plzen offers many historical landmarks and natural points of interest. Tourists are also attracted by a dense network of recreation and hiking trails, zoological and botanical gardens in Plzen and hills in its surroundings – Krkavec, Chlum and Sylván with observation towers. Other places of interest in the region are (in alphabetical order): the remains of Buben, Libštejn and Radyně Gothic castles and Rabštejn nad Střelou castle; Horšovský Týn with its Renaissance chateau; Kaceřov Renaissance chateau; Kašperk castle; Kladruby monastery; Kozel chateau; Lužany chateau; Manětín baroque chateau; Nebílovy baroque chateau; Plasy Monastery; the water castle at Švihov.

### ... Czech Republic

Source: [en.wikipedia.org/wiki/Czech\\_Republic](https://en.wikipedia.org/wiki/Czech_Republic)

The Czech Republic (Czech: Česká republika [ˈtʃɛska: ˈrɛpublɪka]), known alternately by its short-form name, Czechia (approved as official short name by Czech government in 2016; Czech: Česko [ˈtʃɛsko]), is a landlocked country in Central Europe bordered by Germany to the west, Austria to the south, Slovakia to the east and Poland to the northeast. The Czech

Republic covers an area of 78,866 square kilometres with a mostly temperate continental climate and oceanic climate. It is a unitary parliamentary republic, with 10.6 million inhabitants; its capital and largest city is Prague (Czech: Praha [ˈpraɦa], German: Prag), with 1.3 million residents. Other major cities are Brno, Ostrava and Plzeň. The Czech Republic is a member of the European Union (from 2004), NATO (from 1999), the OECD (from 1995), the United Nations (from 1993), the OSCE (from 1993), and the Council of Europe (from 1993).

The Czech Republic is a developed country with an advanced, high income export-oriented social market economy based in services, manufacturing and innovation.

In November 1989, Czechoslovakia returned to a liberal democracy through the peaceful "Velvet Revolution". On 1<sup>st</sup> January 1993, the country peacefully split into the independent Czech Republic and Slovakia. The Czech Republic includes the historical territories of Bohemia, Moravia, and Czech Silesia; it lies mostly between latitudes 48° N and 51° N (a small area lies north of 51°), and longitudes 12° E and 19° E. Elevations are between 115 m (Elbe River) and 1,603 m (Sněžka). The Czech landscape is exceedingly varied. Bohemia, to the west, consists of a basin drained by the Elbe (Czech: Labe) and the Vltava rivers, surrounded by mostly low mountains, such as the Krkonoše range of the Sudetes. The highest point in the country, Sněžka at 1,603 metres, is located here. Moravia, the eastern part of the country, is also quite hilly. It is drained mainly by the Morava River, but it also contains the source of the Oder River (Czech: Odra). Water from the landlocked Czech Republic flows to three different seas: The North Sea, the Baltic Sea and the Black Sea. There are four national parks in the Czech Republic. The oldest is Krkonoše National Park, and the others are Šumava National Park, Podyjí National Park, Bohemian Switzerland.

The Czech Republic is a pluralist multi-party parliamentary representative democracy, with the President as head of state and Prime Minister as head of government. The Parliament (Czech: Parlament České republiky) is bicameral, with the Chamber of Deputies (Czech: Poslanecká sněmovna) (200 members) and the Senate (Czech: Senát) (81 members). The Czech Republic is a unitary state with a civil law system based on the continental type. The basis of the legal system is the Constitution of the Czech Republic adopted in 1993. Since 2000, the Czech Republic has been divided into thirteen regions (Czech: kraje, singular kraj) and the capital city of Prague.

Famous scientists who were born on the territory of the current Czech Republic:

- Josef Čapek (1887–1945) and Karel Čapek (1890–1938), brothers who originated the word robot, for drama R.U.R.;
- Ernst Mach (1838–1916) physicist and critic of Newton's theories of space and time, foreshadowing Einstein's theory of relativity;
- Christian Mayer (1719–1783), astronomer, pioneer in the study of binary stars;
- Johann Palisa (1848–1925), astronomer who discovered 122 asteroids;
- Vladimír Remek was the first person outside of the Soviet Union and the United States to go into space (in March 1978).

Some popular Czech dishes include:

- Vepřo-knedlo-zelo: roast pork with bread dumplings and stewed cabbage;
- Svíčková na smetaně (short: svičková): roast sirloin of beef with steamed dumplings and cream of vegetable sauce;
- Rajská omáčka (short: rajská): beef in tomato sauce, traditionally served with dumplings;

- Koprová omáčka (short: koprovka): beef in dill sauce, traditionally served with dumplings;
- Pečená kachna: roast duck with bread or potato dumplings and braised red cabbage;
- Guláš: a variety of beef and pork goulash stews, served with dumplings or bread;
- Smažený sýr (short: smažák): fried cheese, typically served with potatoes or French fries and tartar sauce;
- Bramboráky (Plzen region naming: vošouch): potato pancakes, traditionally served with sour cabbage.

### ... ZOO Plzen

Source: [www.zooplzen.cz](http://www.zooplzen.cz)

Plzen Zoo, (Czech: Zoologická a botanická zahrada města Plzně) is a Czech zoo, located in Plzen on an area of 21 hectares. It is the second oldest zoo in the Czech Republic, founded in 1926 on the riverbanks of the river Radbuza. Since 2007, the annual number of visitors has exceeded 400,000 people. The collection of animals grew to more than 1,300 species and 6,500 individuals. Around 70 % of the farmed species are not in any other Czech zoo. Specialty is the restored 19<sup>th</sup> century Lüftnerka farmhouse with a collection of domestic animals and 400 exhibits of agricultural implements. Among the most interesting Plzen animals are Indian rhinos, Sudanese cheetahs, Liberian hippos, Komodo dragons, giant tortoises, lemurs, chimpanzees, giraffes, Siberian tigers, Snow and Chinese leopards, penguins and many others. Successful breeding is being achieved with turtles, crocodiles, clawed monkeys, lemurs, many reptiles, birds and small mammals. Plants and animals are carefully placed within recreations of their natural habitats including geology and palaeontology and not randomly and incongruously placed.

### ... Spa town Karlovy Vary

Source: [en.wikipedia.org/wiki/Karlovy\\_Vary](http://en.wikipedia.org/wiki/Karlovy_Vary)

Karlovy Vary or Carlsbad (Czech pronunciation: [ˈkarlovi ˈvari]; German: Karlsbad) is a spa town situated in western Bohemia, Czech Republic, on the confluence of the rivers Ohře and Teplá, approximately 130 km west of Praha, approximately 85 km northwest of Plzen. It is named after Charles IV, Holy Roman Emperor and King of Bohemia, who founded the city in 1370. It is historically famous for its hot springs (13 main springs, about 300 smaller springs, and the warm-water Teplá River). International Karlovy Vary Airport is located 4.5 km southeast from the city. The city is connected by D6 motorway from Prague. The city is also known for the Karlovy Vary International Film Festival, popular Czech liqueur Becherovka and the production of the famous glass manufacturer Moser Glass, which is in Karlovy Vary. The famous Karlovarské oplatky (Carlsbad wafers) originated in the city in 1867.

### ... Bečov nad Teplou Castle

Source: [www.zamek-becov.cz/en/about](http://www.zamek-becov.cz/en/about)

In the west part of the Czech Republic near the spa town Karlovy Vary, on the right bank of the river Teplá and in the middle of the romantic landscape of Slavkovský les a picturesque little town Bečov nad Teplou can be found. This location is full of cultural and natural monuments; the main attraction is a set of historical architecture compound of a gothic castle, a renaissance palace and a baroque chateau. The castle complex at Bečov nad Teplou was founded in the early 14<sup>th</sup> century by the lords of Osek.

### ... Kozel Castle

Source: [en.wikipedia.org/wiki/Kozel\\_Castle](http://en.wikipedia.org/wiki/Kozel_Castle), [www.zamek-kozel.cz/en/](http://www.zamek-kozel.cz/en/)

Kozel Castle is located around 15 km southeast from Plzen and 15 km southwest from Rokycany. The name of the castle – Kozel – has meaning "male goat" in Czech. It is a hunting castle in the Classical style. Architect Václav Haberditz built the castle at the end of 18<sup>th</sup> century for Jan Vojtěch of Czernin. It is a ground-floor building around an inner rectangular court. Around the castle, we can find also a chapel, a riding school and a stable. The area is surrounded by a large park that is popular amongst locals. The entire premises of Kozel Castle is wheelchair accessible.

### ... Radyně Castle

*Source: en.wikipedia.org/wiki/Radyně\_Castle*

Radyně Castle is a castle situated on a hill of the same name (altitude 566 metres), near the town of Starý Plzenec, in the Plzen Region of the Czech Republic. Radyně, like the similarly conceived Kasperk, represents the height of the 14<sup>th</sup> century trend towards the merging of castle buildings. Construction apparently began in 1353, during the rule of Charles IV, and was completed in 1361. The original name of Karlskrone (Charles' Crown) did not become commonly used in the district, and the castle gradually took the name of the hill on which it was built – Radyně. In recent years, the castle has been progressively renovated, and a permanent exhibition devoted to its history can now be seen. The tower is open to visitors of the castle, and its observation point affords wonderful views.

### ... Pilsner Spire

*Source: en.wikipedia.org/wiki/Cathedral\_of\_St.\_Bartholomew\_(Plzeň)*

The cathedral of St. Bartholomew (originally the church of St. Bartholomew) is a Gothic church located on the Main Square in Plzen. It was probably established together with the city around the year 1295. The church became a cathedral in 1993, when the Pilsner diocese was created. It was included on the list of National cultural monuments of the Czech Republic in 1995. The temple is designed as a hall church with main nave and two side aisles, with four bays and two-tower bays on the western side. On the west is located the presbytery with two dome bays, closed on a polygonal with five sides of a dodecagon. The church is accessible with the main entrance in the western frontage, and with two side entrances with anterooms on the northern and southern side of the church. The sacristy is connected to the presbytery on the north, together with a palatal depository. On the southern side from the presbytery is situated the Sternberg Chapel. The cathedral is 58 m long, 30 m wide and 25 m tall. The church tower is 103 m tall (Pilsner spire, Czech: Plzeňská věž) and it is the tallest church tower in the Czech Republic. From its galleries the entire city and its surroundings from the height of 60 metres is visible.

The tower of St. Bartholomew is the theme of the folk song Pilsen Tower (now known as the Pilsen tower above the hills ...). You can hear it on [youtu.be/rL5lxsK\\_T8I](https://youtu.be/rL5lxsK_T8I) or [youtu.be/RN4hw7d0vTM](https://youtu.be/RN4hw7d0vTM)

### ... Brewery Museum

*Source: www.prazdrojvisit.cz/en/*

Brewery Museum in Plzen is the only professional museum of this type in Bohemia and guards a beer making legend. As far as the contents and the extent of the exposition is concerned, there is no other museum like it in the world. We will introduce to you the history of pubs in the town of Plzen, and will show you the malt shop, malt kiln, and rollers, but also a laboratory and beer curiosities. The tour includes Pilsner Urquell beer tasting (0.3 l), available only to persons who are 18 years of age.

The Brewery Museum reveals the secrets of beer making, serving and beer drinking from the distant past. We will take you back to medieval times when beer was drunk through a reed; we will show you medieval cellars hidden under a brewing house built in the 15<sup>th</sup> century, and authentic beer pubs from the beginning of the 20<sup>th</sup> century.

Come to see the smallest jug in the world (only one centimetre high) or a huge tankard from Siberia. Admirers of technology will certainly love the model of a steam brewery, which is a special European technical feature and can produce thirty litres of beer per batch.

Directly from the Brewery Museum you may take a tour of the large historical Plzen underground, a unique labyrinth of cellars and corridors. More information about this tour is available at [www.plzenskepodzemi.cz](http://www.plzenskepodzemi.cz)

## Language Corner

Country	Occultation	Astronomical Observatory
AT	Okkultation	Sternwarte
AU	Occultation	Observatory
CH	Okkultation	Sternwarte
CZ	Zákryt	Hvězdárna / Astronomická observatoř
DE	Okkultation	Sternwarte
DZ	احتجاب	مرصد
ES	Ocultación	Observatorio
FR	Occultation	Observatoire astronomique
GB	Occultation	Astronomical observatory
IQ	احتجاب	مرصد
IR	اختفا	رصدخانه
NL	Occultatie	Sterrenwacht
PL	Okultacja	Obserwatorium astronomiczne
SK	Zákryt	Hvezdáreň / Astronomické observatórium
UA	Покриття	Астрономічні обсерваторії
US	Occultation	Astronomical observatory

### Basics of the Czech language

Source: [wikitravel.org/en/Czech\\_phrasebook](https://www.wikitravel.org/en/Czech_phrasebook)

Czech is a Slavic language, mutually intelligible with Slovak and closely related to Polish. Spoken by over 10 million people as a first language and at least 2 million who use it as a second language.

Czech belongs to the "synthetic" language group, which means that unlike English and other "analytical" languages, different grammatical aspects are expressed in one word by changing the structure of that word – adding an ending or prefix, modifying the core of the word, etc. In analytical languages such as English, the same is achieved by using separate auxiliary verbs, pronouns or adjectives while the actual word remains unchanged. In Czech, one word is often enough to express what English can only achieve by using multiple words.

The only tricky sound to watch for in Czech is this ř letter. It is like putting a trilled 'r' and 'su' in "pleasure" together to make up a 'rrrz' sound.

Pronunciation is very simple, since words are pronounced the same way as they are written. You only need to know how to pronounce each letter. The accent does not mean a vowel is stressed. It means it is long.

In the Czech Republic, a comma "," is used as decimal separator for Arabic numerals.

## Czech pronunciation guide

### Short Vowels

a	like 'u' in "cup" [uh]
e	like 'e' in "red" [eh]
i	like 'i' in "bit" [ih]
o	like 'o' in "bore" [oh]
u	like 'u' in "put" [oo]
y	same as 'i' [ih]

### Long Vowels

á	like 'a' in "far" [aa]
é	like 'e' in "bled" [ehh]
í	like 'ee' in "spleen" [ee]
ó	like 'o' in "for" [ohh]
ú/ů	like 'oo' in "pool" [ooh]
ý	like 'ee' in "speed" [ee]

### The Vowel Ěě

The Czech vowel "ě" is pronounced in one of 3 ways, depending on the preceding letter.

dě, tě, ně                      pronounced as though they were written d'ě, t'ě, n'ě – the preceding consonant is softened, and the e is pronounced [eh]

mě                                pronounced as though it was written m'ě – a soft n, like the Spanish ñ, is inserted and the e is pronounced [eh]

in all other cases    ě is pronounced 'ye' as in "yet" but in a middle of a word 'ie' in "miedo"

### Consonants

b	like 'b' in "bed"	ř	like 'rzh'; is like the trilled 'r' and the 'su' in "pleasure" together, the tip of your tongue should vibrate loosely. Like "diversion".
c	like 'ts' in "tsunami"	s	like 's' in "his"
č	like 'ch' in "child"	š	like 'sh' in "cash"
d	like 'd' in "dog"	t	like 't' in "top"
d'	like 'd' in "duty"	t'	like 'ti' in "Tatiana"
f	like 'f' in "for"	v	like 'v' in "victory"
g	like 'g' in "go"	w	like 'v' in "victor" (rarely used in Czech words, however used in German-originated proper nouns – so basically German pronunciation of 'w' – or words of Polish origin)
h	like 'h' in "help"	x	like 'cks' in "kicks"
ch	like 'ch' in the Scottish word "Loch"	z	like 'z' in "zebra"
j	like 'y' in "yell"	ž	like 's' in "measure" or 'j' in French "Jacques"
k	like 'k' in "king"		
l	like 'l' in "love"		
m	like 'm' in "mother"		
n	like 'n' in "nice"		
ň	like 'ñ' in Spanish "señor"		
p	like 'p' in "pig"		
q	like 'q' in "quest" (very rare)		
r	like Scottish 'r' (a.k.a. rolling 'r')		

### Diphthongs

Diphthongs are sounds that consist of two vowels within the same syllable (like in the English word "meow").

au     like 'ow' in "cow"

eu     like 'eu' in Spanish "Europa"

ou     like 'o' in "go"

The vowel groups **ia**, **ie**, **ii**, **io**, and **iu** in foreign words are not regarded as diphthongs, they are pronounced with Czech "j" between the vowels - 'ija, ije, iji, ijo, iju'.

### Nondigraphs

sh     is not digraph, but two separate consonants, *not* like the "sh" in "ship" but rather 's' followed by 'h' as in **glass house**.

## Czech basic phrase list

Hello. ( <i>formal / informal</i> )	Dobrý den. ( <i>formal</i> ) / Ahoj. ( <i>informal</i> )
Hi. ( <i>informal</i> )	Čau.
How are you?	Jak se máte? ( <i>formal</i> ) / Jak se máš? ( <i>informal</i> )
Fine, thank you.	Dobře, děkuji.
What is your name?	Jak se jmenujete? ( <i>formal</i> ) / Jak se jmenuješ? ( <i>informal</i> )
My name is _____.	Jmenuji se _____.
Nice to meet you.	Těší mě.
Please.	Prosím.
Thank you.	Děkuji.
You're welcome.	Rádo se stalo.
Yes.	Ano.
No.	Ne.
Excuse me, I am sorry. ( <i>getting attention</i> )	Promiňte.
I'm sorry.	Je mi to líto.
Goodbye. ( <i>formal</i> )	Na shledanou.
Bye. ( <i>half-formal</i> )	Nashle.
Bye. ( <i>informal</i> )	Ahoj. / Čau.
I can't speak Czech [well].	Neumím [moc dobře] mluvit česky.
Do you speak English?	Mluvíte anglicky?
Is there someone here who speaks English?	Je tady někdo, kdo mluví anglicky?
Help!	Pomoc!
Look out!	Pozor!
Good morning.	Dobré ráno.
Good evening.	Dobrý večer.
Good night.	Dobrou noc.
I don't understand.	Nerozumím.
I need your help.	Potřebuji vaši pomoc.
I'm lost.	Jsem ztracen.
I'm sick.	Je mi špatně.
I've been injured.	Jsem zraněn.
I need a doctor.	Potřebuji doktora.
One more, please.	Ještě jedno, prosím.
When is closing time?	Kdy zavíráte?
Cheers!	Na zdraví!
Enjoy your meal.	Dobrou chuť.
0; 1; 2; 3; 4; 5;	nula; jeden/jedna/jedno; dva/dvě; tři; čtyři; pět;
6; 7; 8; 9; 10	šest; sedm; osm; devět; deset
100; 1000; 1,000,000; 1,000,000,000;	sto; tisíc; milion; miliarda;
1,000,000,000,000	bilion
before; now; later; yesterday; today; tomorrow	před; teď; později; včera; dnes; zítra
morning; noon; afternoon; evening; night	ráno; poledne; odpoledne; večer; noc
left; right; straight ahead; uphill; downhill	vlevo; vpravo; rovně; nahoru; dolů
North; South; East; West	sever; jih; východ; západ
hour; minute; second	hodina; minuta; sekunda
day; week; weekend; month; year	den; týden; víkend; měsíc; rok
Mon ( <i>first day in week</i> ); Tue; Wed; Thu; Fri;	pondělí; úterý; středa; čtvrtek; pátek;
Sat; Sun	sobota; neděle
Jan; Feb; Mar; Apr; May; Jun;	leden; únor; březen; duben; květen; červen;
Jul; Aug; Sep; Oct; Nov; Dec	červenec; srpen; září; říjen; listopad; prosinec
seasons: Spring; Summer; Autumn; Winter	roční období: jaro; léto; podzim; zima

# Notes

*“An occultation of Venus is not half as difficult as an eclipse of the sun,  
but because it comes seldom the world thinks it's a grand thing.”*

Mark Twain

*“Where there is an observatory and a telescope,  
we expect that any eyes will see new worlds at once.”*

Henry David Thoreau

*“All truths are easy to understand once they are discovered;  
the point is to discover them.”*

Galileo Galilei

## Organizers



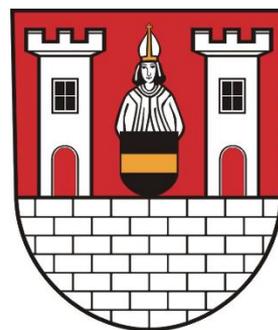
**Rokycany & Plzen Observatory**



**Occultation & Astrometry  
Section of Czech  
Astronomical Society**



**Pilsen Region**



**Town Rokycany**

### **Local Organising Committee**

Karel Halíř  
Alena Halířová  
Ota Kéhar  
Vladimíra Lukešová  
Jan Mánek