The Planets Trail

OFXB
Francois-Xavier Bagnoud Observatory
Dear Visitors,

The Planet Trail is a scale model of the solar system, inviting you to walk across the solar system at three times the speed of light! Designed as works of art, each of these heavenly bodies displays a sign with information about its place in the solar system and providing technical data. The Planet Trail will shrink our 4.5-billion-kilometer solar system down to 4.5 kilometers.

As you’re walking, you’ll experience the relative size of the planets and discover their unique features and distance from the Sun. The farther you walk, the farther the planets are removed from the Sun. Though it will take just a few meters to reach Mercury, Venus and the Earth, you will need a couple of hours to come in sight of Pluto, all the while looking at a breathtaking earthly mountainscape.
THE SUN

Begin at the Sun Station. The Sun is often referred to as an «ordinary» star, which makes sense in that there are many similar ones among the 200 billion stars that make up the Milky Way which, while appearing huge to us (at the trail scale you would need about 30,000 years to walk across it), is really quite small compared with the 2000 billion other galaxies in the known Universe. Yet it is this small star that for the past 5 billion years has provided the Earth with the energy needed for flowers to grow and birds to sing. In its core, nuclear fusion reactions keep transforming hydrogen into helium. The fusion temperature is about 15 million degrees.

MERCURY

In Roman mythology Mercury is the god of commerce, travel and thievery, and the messenger of the Gods. He is portrayed with winged sandals. The planet probably received this name because it moves so quickly across the sky. Completed in roughly 88 Earth days, its revolution speed is second only to the moon’s. A tiny desolate planet with craters just like the moon, Mercury has the widest temperature discrepancies in the solar system. Until recently, the Mercurial surface remained, in large part, a mystery to scientists due to Mercury’s close proximity to the Sun. Being so close to the Sun restricts Mercury’s visibility: appearing just before dawn or right after dusk.

VENUS

Named after the Roman goddess of love and beauty, Venus is sometimes referred to as the Earth’s sister planet due to their comparable size and mass; their similarities end there however, as temperatures of about 480° C due to a green house effect and crushing atmospheric pressure make survival on Venus a challenge. The second brightest body in the sky and with phases visible with binoculars, Venus is known as The Shepherd’s star.
THE EARTH AND THE MOON

Because of their comparable size the Earth and the Moon make up a double planet system, though they have little in common. The Moon, in synchronous rotation with the Earth (meaning the same side is always facing the Earth) is the Earth’s only satellite. A very small planet, the Moon has no atmosphere. Despite its sterility, it has fed the romantic dreams of countless poets. Scientific Research has as of yet failed to discover any inhabited planet other than the Earth in the vast known universe.

MARS

Mars is the fourth planet from the Sun. Befitting its blood-red color, the Romans named the planet after their God of War. This bright naked-eye planet has long intrigued men. In the 19th and 20th centuries, researchers believed they saw a network of long, straight canals on Mars, signaling Martian civilization, although these later proved to be mistaken interpretations of dark regions. The search for Martian life forms has never since ceased. Water is abundant on Mars and though it mostly exists as ice, some liquid water may transiently appear at the Martian surface next to a source of heat such as the impressive Olympus Volcano towering at a 27 km altitude and suspected of sporadically entering periods of activity!

JUPITER

Named after the most powerful Roman god, Jupiter is the largest planet in our Solar System. With over seventy confirmed moons, Jupiter’s system resembles a miniature Solar System. It is primarily composed of gas -hydrogen mostly- and is therefore known as a “gas giant”. Had the planet been only fifty or a hundred times more massive, it could have ignited a nuclear reaction in its core and would have become a star rather than a planet. Perhaps Jupiter’s most iconic feature is its Great Red Spot, a gigantic storm twice the size of Earth that is prone to complex turbulences and vortices.
**SATURN**
In summer Marmots nesting at the foot of the Saturn station seem to gaze at the planet in awe. Barely smaller than Jupiter, Saturn is the planet furthest removed from the Sun that can be seen with the naked eye. Named after the Roman god of agriculture, it is famous for its fabulous ring system, composed of icy particles that's thought to be the result of immense tidal forces produced by Saturn’s gravity.

**URANUS**
Named after the Roman sky deity, Uranus is invisible to the naked eye and was the first planet to be discovered through the use of a telescope. It was identified completely by accident by an astronomer-composer who built his own telescopes. One night in March 1781, as he surveyed the different stars in the sky, he noticed a faint blue green object. He hardly imagined he had discovered the first new planet since antiquity. Because of its distance, Uranus’ detailed observation requires powerful telescopes.

**NEPTUNE**
Uranus’s twin, Neptune, is one of the smallest « gas giants » in our solar system. Its atmosphere is made of hydrogen and helium, with some methane (CH₄). The methane absorbs red light, making the planet appear a lovely blue, hence its name in reference to the Roman god of the sea. Invisible to the naked eye, its discovery owes nothing to serendipity but to the genius and persistence of scientists who determined its position using mathematical predictions. Telescopic observations confirming its existence and position were made just a few nights later in 1846. It is worth mentioning that in 2007 an exoplanet quite similar to Neptune was discovered at the OFXB. (All of the planets in our solar system orbit the Sun. Planets that orbit other stars are called exoplanets).
PLUTO
Discovered in 1930 and named after the Roman god of the underworld, Pluto is one of the coldest bodies in our solar system. In 2006 Pluto was demoted from planet status to that of dwarf planet. Since then several dozen dwarf planets have been discovered primarily in the far regions of the solar system. From the Pluto station the jaw-dropping sight of Zinal’s Imperial Crown will make you forget your two-hour trek.

A sign posted at each station provides technical information. Symbols and meanings are detailed below:

- **M** Mass, in Earth masses
  
  \[
  \text{Mass of Earth} = 5.976 \times 10^{24} \text{ kg}
  \]

- **p** Density (water density = 1)

- **R** Radius, in Earth radiuses
  
  \[
  \text{Radius of Earth} = 6378 \text{ km}
  \]

- **Prot** Sidereal Rotation measured in days
  
  (time required for a single rotation of a planet on its axis compared to the stars)

- **Prév** Sidereal Period measured in days
  
  (time required for a planet to make one complete revolution around the sun)

- **Tmax** Maximum Surface Temperature measured in degrees Celsius

- **D** Mean Distance to the sun measured in Astronomical Units (AU)
  
  \[
  \text{1 AU} = \text{about 150 million km} \text{, i.e. mean distance between Earth and the Sun}
  \]

- **Nsat** Number of satellites

- **Vrot** Rotation speed at the equator in km/h

- **Vorb** Average orbital speed in km/h

About the Sun:

- **Tsurf** Surface Temperature measured in degrees Celsius

- **Tcent** Core Temperature measured in degrees Celsius

- **DTerre** Mean distance to Earth in km

- **Age** Age in years
The Planet Trail

Starting Point

Finishing Point in summer: Tignousa; the Sun station is situated 200 meters from the top of the funicular.
Finishing Point in winter: The Pluto station (1.5 km beyond the Hôtel Weisshorn).

Distance in summer: 6 km.
Distance in winter: 4.5 km.

Scale of distances: 1 m = 1’000’000 km.
Scale of heavenly bodies: 1 m = 100’000 km.

Note: Though not directly on the Planet Trail, the OFXB astronomical observatory is worth a short detour that allows you to observe the sun (for opening hours see: www.ofxb.ch).
You might also want to continue as far as Pluto (1.5 km beyond Neptune) and take the time to appreciate the wildlife from a dedicated observation point.

François-Xavier Bagnoud Observatory
The OFXB offers sun observations during the day and stargazing events in the evening several times a week during the summer. Back in St-Luc, you might want to enjoy a show at the digital Planetarium located in the village center in order to discover what’s new and what the sky looks like at this time of year.

Program of animations available from:
St-Luc Tourist Office
François-Xavier Bagnoud Observatory
www.ofxb.ch

For those who would like more information a detailed brochure is for sale at the St-Luc Tourist Office at the price of CHF 1.-.
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