



## 3rd floor – TIME

### Star Time

#### *In the time machine*

***The light of the stars travels from far away. It needs time to do so, just as we need time when we travel, even though light is much faster. That is why we see some stars today as they looked 500 or 2000 years ago, i.e. light from the Middle Ages or from the time of the Romans***

***Can you find the constellations here on the star chart on the hourglass?***

- 1. Little Dipper with Pole Star***
- 2. Big Dipper***
- 3. Cassiopeia***
- 4. Perseus***
- 5. Auriga***
- 6. Taurus***
- 7. Orion with Sirius (in the dog) and Rigel***
- 8. Swan with Deneb***
- 9. Lyra with Vega***
- 10. Eagle with Altair***
- 11. Leo***
- 12. Sagittarius***
- 13. Pegasus with Andromeda with Andromeda Galaxy***
- 14. Hercules***
- 15. Gemini***
- 16. Libra***

#### **We live in a time machine**

By the way, the stars can serve us as a kind of cosmic time machine. They are so far away that the light from them to us takes several years, although it covers 300,000 km in a single second! If we were to ride on a beam of light, we would only need a good second to reach the moon. It takes eight and a half minutes to reach the sun, and three quarters of an hour to reach Jupiter. But it takes 4.3 years to reach the nearest star - Proxima Centauri! So when an alien looks from there to Earth, it is not seeing what is happening here at the moment, but what happened a little more than four years ago. On Sirius, the brightest star in the night sky, on the other hand, you see what happened a little more than eight years ago. In contrast, the light from and to Vega (together with Deneb in Swan and Altair in Eagle, it forms the summer triangle) takes 25 years.

#### **Light from the Middle Ages**

But that is by no means all. In the telescope on Polaris, we could see what it looked like here 430 years ago - that's before the 30 Years' War! If we were on Rigel in Orion, we could observe the Middle Ages. And on Deneb in the Swan we could see what the ancient Romans were up to - it is more than 1600 light years away and shines 40,000 times brighter than the sun. We wouldn't see any people at all if we looked over from our neighbouring galaxy, the Andromeda Nebula: Our light rays won't arrive there for another two and a half million years. And that is only the nearest of about a hundred billion galaxies.

### **Illusion of the starry sky**

By the way, looking at the starry sky is not only a glimpse into the distant and most remote past - it also offers us a sight that is actually an illusion:

The stars were never there as we see them today: Sirius stood where we see it eight years ago, Vega 25 years ago, Polaris 430 years ago and Deneb 1,600 years ago. We see a virtual image, so to speak. One or the other star might even have disappeared already, although we still see it for a few hundred or thousand years.

Cool, isn't it?