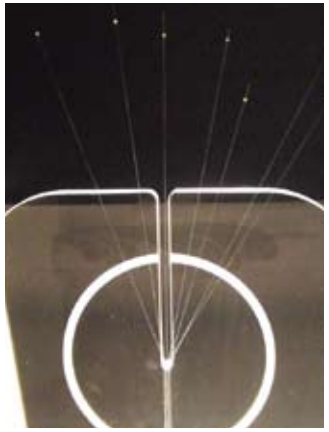
U-2 Stellar Evolution

Like the Sun, stars are enormous balls of very hot gas and they shine due to nuclear power (fusion) at their center. The lifetime of a star depends on its mass. Stars with a large mass have a short life span, which ends in a supernova explosion. Stars with a small mass have a long life span and they emit gas to form a planetary nebula in the end. If the mass is too small, there is no nuclear fusion and the star does not shine.

U-6 Spectrum

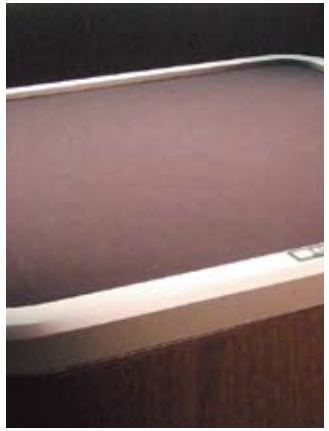
Since a star's light is made up of many colors, it is possible to separate the light into the different colors using a prism. The resulting distribution of colors is called a spectrum. The properties of a spectrum are based mainly on the surface temperature of the star, and also determine the colors of the star. Red stars have a low surface temperature, and stars that are yellow, white, or bluish-white have a higher surface temperature, in that order. The spectral type is used to classify stars based on their spectra.

U-7 Constellation Model



Stars in the night sky look as though they exist on a flat surface, without any depth or difference in distance. Stars are actually distributed three-dimen-sionally across the universe, lined up differently depending on the direction in which you are looking. By looking through the transparent plate in the middle of this device, you can see the shape of the constellation as seen from Earth. Take a look and compare how the stars appear to be lined up, and how they are actually lined up in space.

U-8 Stars of our Galaxy



There are more than 200 billion stars in our Milky Way System. The brightness of each star that we see in the night sky is based not only on the brightness of the star itself, but also on its distance from the Earth (Sun). In this exhibit, the stars that we actually see are arranged as a three-dimensional model so that you can see the distance of each star from the Sun. Together, let's recreate the Milky Way.

U-9 The Universe

Outside the Milky Way, the universe expands broadly, dotted with many galaxies. While forming groups, galaxies ride on the expansion of the universe and may appear as though they are becoming farther and farther away from us. The universe was formed from high-temperature and high-density conditions in an explosion called the "Big Bang", which occurred 14 billion years ago, and it continues to expand even today. The light remaining from the Big Bang is observed as weak radio waves and infrared rays.

U-12 Touch the constellations

There are 88 constellations in the sky. Among them, there are 60 that can be seen from Sendai. This exhibit reproduces today's starry sky. Touch the night sky to make different constellations appear. Try looking at the constellations while changing directions of the exhibit. Find a constellation that you know, and see what the stars look like during different seasons.

THE UNIVERSE

Exhibit Guide

SENDAI ASTRONOMICAL OBSERVATORY
仙台市天文台

U-2 Stellar Evolution

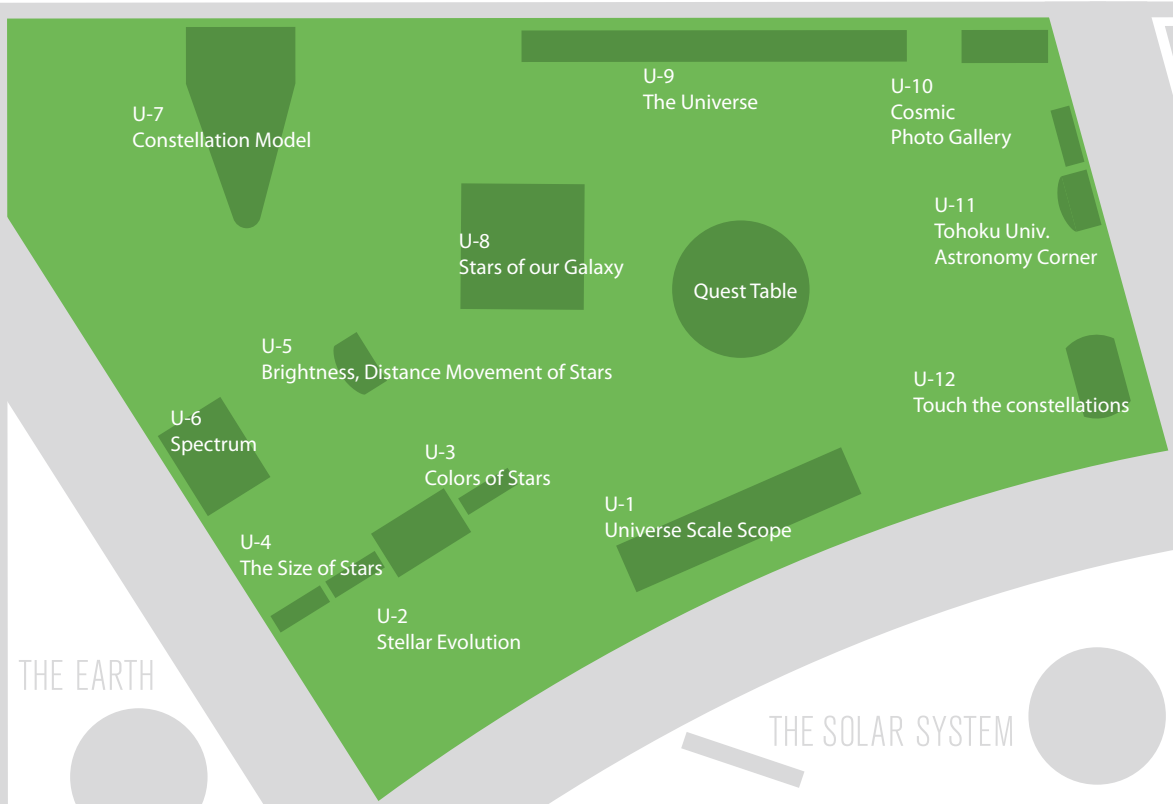
Gather hydrogen particles (white plastic balls) and make stars.

U-6 Spectrum

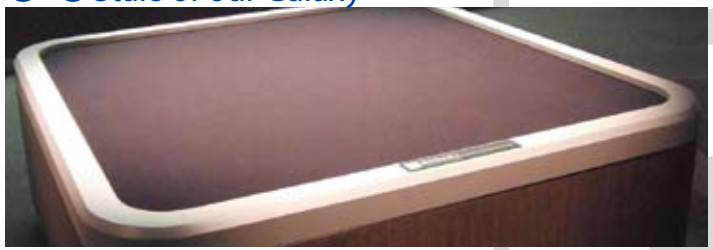
Find out the temperature of a star and what it is made of by observing its light.

U-7 Constellation Model

How are the stars that make up actual constellations lined up?



U-8 Stars of our Galaxy



Watch as the number of stars in the Milky Way increases.

U-9 The Universe

The universe, which has continued to expand since its birth, is 13.7 billion years old.

U-12 Touch the constellations

Find out which stars are in the sky today. How many constellations do you know?