



A model of the light sensors inside the Super-Kamiokande, which is located in an underground chamber 1,000 meters beneath the surface of the earth, on display at the science museum.

Roadside Station with Facilities that Bring Space Science More Familiar with Us



The building with the round silver roof is the Hida Space Science Museum Kamioka Lab.

In Hida, a city located in the northernmost part of Gifu Prefecture, there is a roadside station with a science museum. The museum allows visitors to experience scientific experiments with matter that reveal the mechanisms of the universe. The location of the science museum at a roadside station used by many people has, in turn, contributed to spreading awareness of space science research itself.

(Text: Tanaka Nozomi)

The town of Kamioka in Hida City, Gifu Prefecture, is home to a cluster of leading Japanese research centers dedicated to exploring the mysteries of the universe and elementary particles. Kamiokande in particular, is a facility where the late Professor Koshiba Masatoshi, a winner of the Nobel Prize in Physics, and others conducted his groundbreaking research. Its successor, the Super-Kamiokande and KamLAND¹, where another laureate of the Nobel Prize in Physics, Professor Kajita Takaaki, and others conduct his research, are famously now in operation. The gigantic state-of-the-art detectors

of cosmic elementary particles have been installed in an underground chamber 1,000 meters beneath Kamioka. Conducting nonstop observations mainly of a type of elementary particles called neutrino, it thereby brings scientists pursue unraveling the mysteries of matter and the evolution of the universe. The Hida Space Science Museum Kamioka Lab opened in the spring of 2019 at the Roadside Station Sky Dome Kamioka as a place where scientists can share the content of their research with a broader audience. According to Kawakami Tomoko of the roadside station administration office, in the past, the pub-



Left: The transformation of elementary particles and neutrinos is presented in a game format at the science museum.
 Center: Visitors can enjoy video simulations of elementary particles and neutrinos projected on a large screen at the science museum.
 Right: Original coffee with images of the Super-Kamiokande model featured in the package design at the roadside station store

lic could visit the cutting-edge research facilities in Kamioka only few times a year. But after the opening of the space science museum, anyone can know and learn about the contents of the research of these facilities at any time through the museum's exhibitions and videos. "The displays in the museum are created under the supervision of the Institute for Cosmic Ray Research, University of Tokyo, and Tohoku University. Images of the interior of Super-Kamiokande are projected onto a large seven-meter-high screen, creating the impression of being inside the actual facility. The expansive panoramic imagery gives visitors the opportunity to experience virtually the process of filling the huge water tank with pure water for experiments and the reaction of light sensors responding to brightness when neutrinos penetrate through the tank (see photo). Also, by playing games, they can immerse themselves in the microscopic world of invisible elementary particles. Science communicators are on hand at the museum to offer explanations and other information. Descriptions of the exhibits are provided in both Japanese and English, and English versions of the videos projected on the screen are also available. Super-Kamiokande souvenirs are the most popular at the roadside station store, with coffee mugs featuring the Super-Kamiokande logo and puzzles created under the supervision of the Institute for Cosmic Ray Research, University of Tokyo, selling particularly well," says Kawakami. At the roadside station there is also a restaurant where visitors can savor local delicacies. The restaurant serves dishes made with Hida beef², a high-brand Japanese beef bred in Gifu Prefecture, and soft-serve ice cream made with locally-grown egoma³.

The area around the Roadside Station Sky Dome Kamioka also boasts some attractive sightseeing spots. Hida Furukawa, a small town about 30 minutes by

car from the roadside station, is known for Shirakabe Dozogai Street, a charming district which has preserved some fine examples of Japan's traditional architecture. The Seto River, which runs through the district, is home to as many as 1,000 colorful carp, and a 500-meter stretch of its banks lined with traditional white-walled Japanese storehouses and stone walls is a popular spot for enjoying the charming scenery. This is how Kawakami explains the appeal of the roadside station.


"The Hida region, which includes Kamioka, is a unique roadside area where visitors can experience all at once the traditional Japanese sights and the cutting-edge scientific research facilities that Japan can be proud of. We hope that they will stop by the Roadside Station Sky Dome Kamioka in the area, to savor its charm, and fall in love with the region." 



Photo: PIXTA

Above: Along the river, there is a traditional townscape of white-walled storehouses called *shirakabe dozo* with stucco finishing on the clay walls in Hida Furukawa.



Below: From spring to fall in Hida Furukawa, as many as 1,000 carp swim in the river, delighting tourists.

1. The world's largest underground neutrino detector operated by the Institute for Cosmic Ray Research, University of Tokyo. As implied by its name, which combines the words "neutral" and "ino" ("small" in Italian), neutrinos are tiny elementary particles. In addition to studying their properties, scientists use neutrinos to continue to elucidate the history of the universe. Since the facility had to be constructed underground to reduce the effects of cosmic rays, this site was chosen because of the solid ground of Kamioka, a former mine, the availability of excellent excavation techniques, and the abundant snowmelt. Kamiokande operated from 1983 to 1996, and KamLAND was established on its site and started operation in 2002. Super-Kamiokande has been in operation since 1996
2. A brand name awarded to Japanese Black Cattle of the highest quality bred in Gifu Prefecture for at least 14 months and evaluated as having meat with particularly fine and tender fiber and excellent flavor.
3. Egoma is an annual herb of the Perilla family, native to Southeast Asia. It is used as food and for oil (egoma oil). It is a different species from sesame.