# Reception of pen pals (October 6-12, 2019)

**My correspondent:**

My pen pal's name is Heidi. She is 19 years old. She is of Finnish origin and lives in the city of Haapavesi. She plays many sports such as handball, skiing and loves running. Heidi is the eldest of 7 brothers and sisters. So she has enjoyed the quietness of our home. We continue to exchange on various subjects and I hope to keep in touch with her for a long time.

**The visit that made the biggest impression on me:**
The visit that made the most impression on me was the visit to CERN because I learned many things about particle physics and particle accelerator that is present on the site. I was very interested in the explanations about the International Space Station and its control center. I discovered a lot during the activity at the S'Cool LAB about the different types of particles. In groups of 4 students we did an experiment to highlight the presence of muons. These particles are represented by the sign μ. Muons have almost the same characteristics (trajectory, speed of movement..) as electrons except that their mass is much higher than that of electrons. This activity was really exciting. The explanatory tour of the particle accelerator was really interesting and taught me many things about the properties of the chemical elements that are used in the composition of the pipe that makes up the accelerator.

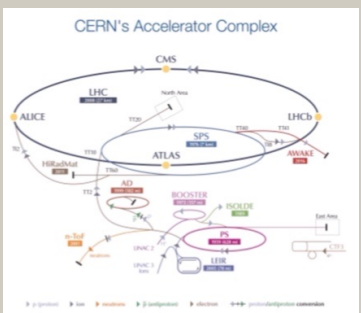
**The activities and visits of the stay:**

On the first day we attended a presentation of each country. Then, in the afternoon we visited the city of Rumilly with our pen pals. At the end of the day, a welcome party was organized at the school.

**On Tuesday**, we went to the medieval village of Yvoire. Then, we went to visit the bottling plant of the Evian company. We followed the path of the water from the impluvium to the packaging of the bottles. Indeed the rain falls and enters the ground of the impluvium which has a surface of only 32km2, about 15 years later, the water reaches the Cachat spring where it meets the light for the first time since it entered the ground. On its way to the spring, the water encounters two rocky moraines that allow it to be enriched with minerals and make it purer. It makes its way through the different geological layers and then flows slowly to the spring. Once at the spring, part of the water flows into a fountain for the town's residents and another part is directed to the factory, which is located a few kilometers away, through opaque pipes that protect the water's properties.

**On Wednesday**, we went to Vaujany, in order to visit the hydrelec museum on the hydroelectric power station of Grand'Maison. We learned elements around the production of hydroelectric energy. The hydroelectric power station of Grand'Maison is the most powerful of France. This site contains two water reserves. One upstream called the Grand'Maison reservoir and one downstream called the Verney reservoir which is located at the height of the power plant. When the electricity consumption is high, the water from the upper reservoir passes through the turbine and joins the lower reservoir. During off-peak periods, mainly at night and on weekends, the water from the lower reservoir is pumped to the upper reservoir. The system thus makes it possible to deal quickly with a peak in consumption. We learned a lot about the different types of dams and the history of the different turbines. Then we attended a presentation of a future EDF project.

**On Thursday,** we took the bus to CERN. We learned a lot about how the control center works in connection with the International Space Station and the particle detectors. Then we visited a small museum with models explaining the construction of the particle accelerator and the contribution of each country in the project. The particle accelerator (LHC) allows protons or ions in beams that travel in opposite directions to be accelerated to near the speed of light. Other parts of the accelerator contain other particles such as electrons, antiprotons and neutrons. The goals of the construction of this complex of detectors and accelerators are to understand where the anti matter is, how it is formed, where the mass comes from... At the end of the visit we participated in an activity at the S'Cool LAB. We were able to highlight the presence of muons. These particles have characteristics very close to those of electrons (trajectory, speed of displacement...) except that their mass is much higher. We used dry ice and alcohol in a plastic box to observe "traces" of displacements in the space of the box. We observed small lines in the box. Thus we observed the presence of muons.



**On Friday** we went to Annecy to discover the functioning of a water purification center. To do this, we went to the SILA. We learned that when the wastewater arrives, it is filtered and then undergoes many steps before being put back into service. The water is first decanted into a tank, the sands fall to the bottom and then thanks to the sloping bottom they reach a waste garbage can, then the oils rise to the surface. The water is filtered and then goes into another tank where it is placed in clay balls. Here it is filtered again and goes to a tank where it will rest for a few hours.

**Some anecdotes about the trip :**

At the end of sojourn, we went in an italian restaurant to eat and have a good moment. It was really funny because the restaurant didn't have an english menu so Heidi didn't understand what was written. I tried to translate but it was really hard and she didn't understand better. So , my mother tried to do better than me and Heidi understood a little bit. It was funny because the server was looking us like if we were weird and he had to wait 30 minutes to take our order and he was a little bit angry. The same evening, Heidi gave us candies from her country and I tasted it next to her. It was not good at all, it was like liquorice with salt. The main ingredient of their candies named Salmiakki was amonium chloride. And I made a grimace but I didn't want to hurt her so I said it was original.