

## Ana Maria Labrador Garcia

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**From:** Jonathan Richardson <jonathan.richardson.sodermalm@engelska.se>  
**Sent:** Thursday, May 16, 2019 15:01  
**To:** Ana Maria Labrador Garcia; Roshni Raja; Dr Rachel Heimeier  
**Cc:** Maria Hamnström; Södermalm Group Science  
**Subject:** Fwd: Message from "IES-PRT-SOD-07"  
**Attachments:** 20190516144832565.pdf

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Please find attached the feedback forms from the very successful second trip for the Advanced Physics students to the MAX IV particle accelerator in Lund.

I have copied the student's trip report below which will give some idea of what they saw and did!

## Lund Field Trip Report

Pictures: <https://photos.app.goo.gl/QJ94oiTakPXqHoem6>

The trip to MAX IV showed real live course areas that we had covered in all our physics courses, especially the extended physics course. We have talked about quantum mechanics, particles and waves. During the trip we got to meet scientists and see and hear more about their field of work and their goals of research.

The Max IV facility is in its essence not solely intended for science geeks and academics, in actuality it has various real-life implementations produced by the research gathered from the synchrotron that has made its way into mainstream engineering and natural science. Today the Max IV facility is the home of various research project that cover all aspects of science. Beamlines and synchrotrons work in cohesion to study proteins and the molecular structure of a variety of elements. This research facilities are available for industrial use and for the public. One example of the research that is done at Max IV is the investigation of elements such as graphene and carbon which could potentially be utilized within the medical field to help combat cancer.

Our trip started with meeting up in the Stockholm Central Station and thereafter boarded the train. On the train Mr. Richardson shared a cheesecake from his birthday party the weekend before. After we arrived in Lund we took the bus to our hostel in Sparta, and got the keys to our rooms. Shortly after we went to the MAX IV facility and meet Ana Labrador. She was our host during our visit. We got an introduction by her and then got to see the femtoMAX beam-line. Since there was a "beam line" open house this day, there was a "frågesport" for all attendees to take part in. All the researchers talked about the development of their beam-line.

This was the end of the short introduction day at the facility and we then concluded with dinner at a local pizzeria.

The second day, we woke up early to go back to the facility. This day, we were joined by a group of students from a Finnish school as well. We got a tour around both the accelerator rings, where we got to talk to a few of the researchers working on the beam-lines. After walking all the way around, we went up to the cafeteria and lecture hall, where a number of the researchers spoke about the beam-lines they worked on and the underlying mechanics of them.

The view from the cafeteria was great, and there was even a few binoculars that we could borrow to look out over Lund. After lunch, the lectures continued, but at the end of the day we got to take another walk around the experiment hall. This time, we had time to stop by their "exhibition", where parts from the current linear accelerator and the rings were displayed, along with parts from the previous MAX accelerators. They had also built a statue/robot of parts from these previous facilities: his name was Max! That evening, we went with Mr. Richardson and the Finnish teacher to an Italian restaurant, where we had a great meal.

On the Thursday, our last day in Lund, we went to the MAX IV facility again, where we got to listen to a few more lectures. After that, we split up from the Finnish group; they got to visit the Finnish/Estonian beam-line at MAX IV, while

we went to a biology lab belonging to Lund University to learn more about how samples for the accelerator are made. This lab in particular worked on producing crystallizing proteins, and we had the opportunity to observe most of the processes and try our hands pipetting samples into the crystallisation trays before they are left to "crystallise" in the sample hotel!

"All in All" a great trip and a special thanks to all at Max IV for helping to organise the trip and to Mr. Richardson for organising the school side of the trip.

Best wishes / Med vänlig hälsning

**Mr. Jonathan Richardson**

Physics Teacher

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Internationella Engelska Gymnasiet Södermalm

Allhelgonagatan 4, SE - 118 58 Stockholm, Sweden

+46 (0)8 562 28 740 | +46 (0) 76 315 26 34

<http://www.engelskagymnasiet.se/> | [jonathan.richardson.sodermalm@engelska.se](mailto:jonathan.richardson.sodermalm@engelska.se)

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Date: Thu, 16 May 2019 at 14:42

Subject: Message from "IES-PRT-SOD-07"

To: John Richardson <[jonathan.richardson.sodermalm@engelska.se](mailto:jonathan.richardson.sodermalm@engelska.se)>

E-postmeddelandet skickades från "IES-PRT-SOD-07" (MP 4054).

Skandatum: 16.05.2019 14:48:32 (+0200)

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