

Germany Immersion Trip 2010

Diaries
3rd June - 22nd June

Munich Highlights:

**Ludwig-Maximilians
Universität
Max-Planck Institutes
Marienplatz
Neuschwanstein Castle
Deutsche Museum
Allianz Arena
Olympic Tower
Dachau Concentration Camp**

Göttingen Highlights:

**Georg-August Universität
Observatory
Göttingen City Tour
Göttingen fortresses
Hannoversch Münden
Physicists Tombs
Hamburg Day Trip
PhyWe Trip**

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3rd June - Arrival to Munich

Kwong Chang Jian

Our flight touched down at around 6a.m. German time. Having cleared customs, we met Prof. Englert at the Airport and took the train from the airport to the Munich Central Station (Hauptbahnhof). Along the way, the scenery was very beautiful, with green grass and fields, which was really great for the eyes.



Scenery taken during train ride

Upon reaching the central station, we then took a short walk to the Euro Youth Hostel. We had a great breakfast in the hostel, where the food for breakfast is rather delicious, with 4 different types of ham, as well as several different types of breads and buns provided. The eggs served were painted with the colours of the German flag, which was rather unusual.



Egg with German flag colours



Buildings in Munich city

After having our breakfast, there was some free time which we utilized to take a look at the area around the hostel. The designs of most of the buildings in Munich are very unique; they either retain their medieval structure and design or there are some paintings painted onto the walls of the buildings.



More buildings in Munich city

In the afternoon, we went on a guided tour of the central area of the city. Firstly, we learnt about a place called Marienplatz which is the centre of the Munich. It represents a holy district for the locals as a relic is placed under the crown worn by the statue of Mother Mary. In addition, we also learnt that whenever there are some Catholic celebrations, it is likely that the celebrations will be held in Marienplatz.

After that, we moved on to the St. Peter's Church. We had the opportunity to go into the St. Peter's Church and take a look at the decorations and the wall paintings inside the church. Inside the church, we also learnt from our tour guide about the history of the church. We were told how the church was rebuilt, having been destroyed or heavily damaged in the WWII and also how the church acted as some sort of a social institution, giving out pretzels and beer to the poor people. Also, we learnt about how the church was special, compared to the other churches. St. Peter's spreads the news regarding the death of the Pope by taking the tiara worn by St. Peter's statue inside the church off. One interesting fact about one of the paintings on the ceiling of the church is that there is a small section depicting how the church acts to help the poor by sending a rider with a white horse to inform the poor people that they are able to go to the church and have some pretzels and beer. Can you spot the white horse? (On next page)

From St. Peter's church, we then moved on to the beer garden. Unfortunately, due to the rainy weather, the beer garden was closed. The beer garden is also in the middle of the old market place which was placed there during the times of the Bavarian kingdom. Also,



Ceiling painting in St. Peter's Church

shops of the market place were built during the time of the Munich Olympic. From the beer garden, we walked to the Hofbräuhaus, which is the most famous beer brewer in Munich. Inside the Hofbräuhaus, we were told that there were 386 lockers for the customers to store their own cups. These customers are those who go there for beer frequently, with some cups even passed down from their ancestors.

In addition, we also had the chance to learn of King Maximilian I, first king of the Bavarian kingdom. There was a statue of the King outside the Maximilian theatre in Maximilian Platz. In a building nearby, we were told that it was once the castle of King Ludwig I, son of King Maximilian I; while opposite it is a building with beautiful wall paintings on it. King Maximilian I is a famous king in Munich due to the fact that he is the King who gave the people of Bavaria their first constitution. We were also told an interesting fact by the tour guide, that King Maximilian had in fact, not approved the design of his statue, for he was seen sitting on a chair doing nothing. However, he died soon afterwards, and his son, King Ludwig I decided to go ahead with the original design.



Lockers for beer mugs



Statue of King Maximilian I

King Ludwig I is also a famous figure in the history of Bavaria. This is due to the fact that the wedding of King Ludwig I, which was the largest wedding held in Munich during that time, was the origin of the Oktoberfest. In addition, King Ludwig I financed many buildings in Munich. After that, we saw a statue where there is a head of the lion. Again, there is interesting trivia related to the statue. Apparently, King Ludwig I had an affair with a mistress called Lola Montez. During his reign, the people were unhappy with the relationship of their king with his mistress and one day a student wrote a note denouncing the reign of the king. The king was naturally unhappy with this and put out a reward for those who could bring him the person who wrote the note. The student, tempted by the reward, decided to step forward and told the king that he was the one who wrote the note and asked for the reward. He was successful and was given his reward. However, he panicked after that and stood near the statue holding the nose of the lion with his reward scattered onto the floor in front of him. People who saw this related the action of touching the nose of the (bronze) lion as the reason for obtaining such wealth and this soon became a myth or tradition.



The bronze statue outside Münchner Residenz. Note the shiny part , which is due to constant touching for hundred over years.

The city of Munich is one with a rich history and culture and combines this with the modern development of science and technology. This is precisely the reason why this is one of the cities in Germany where many tourists flock to for holidays.

4th June - LMU Tour + English Garden

Fang Yong Wei

The second day in Munich started at 9.30am, where we were first introduced to the Ludwig-Maximilians-Universität Munich (LMU). The weather was better than yesterday, with no rain, unlike the first day.

Upon reaching the University, we were ushered into a lecture theatre, where we were greeted by the LMU's Dean of Physics, Prof Schenzle and Mrs Schorn. We were greeted with a warm welcome and received a LMU T-shirt as a welcome gift.



LMU T-shirt as welcome gift



Glass panel on top of one of the LMU entrances

A talk by Prof Schenzle followed after, where we learned about the different areas of research in physics provided by one of the leading research universities in Europe. We learnt that many notable individuals had studied or taught at the University. For instance, Max Planck, the founder of quantum theory and Nobel laureate in Physics in 1918, was an alumnus of the university.

After the talk was a tour around the university. The university is rich in history, with lots of beautiful sculptures, statues and paintings surrounding it.



The room where the commencement ceremony is held in LMU

After this was the introduction to the student canteen, known as the Mensa. The system works in a different way compared to Singapore. We were first given a card with which we can top-up the value inside using a machine. Using this card, we could then pay for our meals. The choices were shown on a screen.



Topping up Mensa card for lunch



TV screen showing lunch menu for the day

After lunch, we had a talk on Ultracold Atoms. That ended the programme for the trip, but not for our day. Using our free time, we took the opportunity to visit the Englischer Garten, German for English Garden. It is a public park in the center of Munich and one of the world's largest urban parks. The name refers to the style of gardening; the term English garden is used outside of the English speaking world to refer to the style of informal landscape gardening which was popular in the United Kingdom from the mid 18th century to the early 19th century.

We then had dinner and a chilling session at a beer garden near the Chinesischer Turm ("Chinese Tower"), which is one of the prominent buildings in the Englischer Garten.

That concludes our 2nd day in Munich as the day darkened and we headed back our hostel, eagerly awaiting the arrival of a new day.



Chinese Tower in the English Garden

5th June - Neuschwanstein Castle

Chua Wen Xiu Gwen

After a week of rather taxing but inspiring lessons at the Ludwig Maximilian University (LMU), I was eagerly looking forward to the activities that had been arranged for us for the weekend, especially for today, as we would be visiting one of the most famous castles in Germany. This castle was none other than Neuschwanstein, castle of King Ludwig II.

To me, Germany is a place endowed with rich historical background, enchanting cultures and traditions. Germany, like most of the other European countries, has a history of being ruled by royal dynasties. Kings, queens, princes, princesses and castles, which I thought could only be found in the fairytales I read during my childhood, are in fact a part of their history in these European countries. The thought of being able to learn about the rich historical background of Germany and to view the magnificent castles really enthralled and excited me for the trip today.

The day began with pretty weather: the sunshine was extremely welcoming. Fortunately, there was neither the cold wind which would send chills down your spine, nor was there the drizzles that would dampen the atmosphere. We boarded the bus that had been prearranged for us and started on our journey to the castle. On our way to the castle, we passed by extensive grasslands that had numerous horses and cows. The scenic view was one which we could never find in Singapore. The wonderful sights of nature seemed to be calling us to embrace it. Looking at the magnificent view, there was suddenly a soothing sensation, which relaxed our tensed souls. We stopped several times to take photographs. We also stopped by the Wieskirche halfway through the journey. Churches in Munich are decorated very differently from those you see in Singapore. However, probably due to the non-air-conditioned and hence, stuffy bus, I suffered from motion sickness. I had to bear with this uncomfortable feeling till we reached our destination. However, this effort was well-repaid when I reached the castle.



Picture taken on the way to the back of castle

The Disney-look-a-like castle was indeed amazing and the tour around the castle was really an eye-opener. We climbed for a rather great distance before finally reaching the entrance of the castle. At the doorstep, we were brought on a guided tour round the castle where we learnt about the historical background of the castle. In the castle, we viewed with great amazement, the architecture and drawings of the castle. From the intricate

design of the architecture, one could easily deduce and admire the lavish lifestyles of the royal dynasty. Nevertheless, besides admiring the magnificent architecture, I began pondering if the rich royal dynasty was able to comprehend the plight that the poor may be suffering in their nation. Quickly, I concluded that the social issue of the rich-poor divide has, and will always exist in every era of all nations.



A magnificent view of the Disney-look-alike castle

After viewing and touring the castle, it was soon close to evening, and we then decided to make our way out of the castle. Though feeling very exhausted, we sadly and unwillingly proceeded out of the castle and boarded our bus back to our hostel. On our bus journey back, we slept soundly and sweetly, with the beautiful images of the castle flashing across our minds. Today will definitely be one of the most memorable days of my Germany trip.

6th June - Neue Pinakothek, Deutsches Museum, Welcome Dinner

Loo Yoke Leng

To many people, this day, 6th June 2010, may have been a normal day. However, to me, it was a fulfilling day that I will remember for the rest of my life.

This was the 4th day of the Germany Immersion Trip (GIT) organised by the NUS Physics department, when we have just started to adapt to the environment in Munich. Since it was a Sunday, no lesson was planned on that day. Instead, trips to two museums, Neue Pinakothek and the Deutsches Museum, were organised.

The guided tour at Neue Pinakothek (New Art Museum) was very informative; it helped me to understand more about Bavarian history and culture through the eyes of the painter. This was a good opportunity for a non-artistic person like me to step into an art museum and have a look at the art pieces, and I think it was really a nice experience.

Following the visit of Neue Pinakothek was the visit to the Deutsches Museum. It is a huge place, with a lot of exhibits about all aspects of science. The demonstration of the Van de Graaff generator was impressive, and many of the exhibits were also very interesting and educational. I think it is a wonderful place for science students to go and explore.



Guided tour at Neue Pinakothek



Posing in front of Lufthansa cabin door at Deutsches Museum



Magnificent view from top of St Peter's church tower

After the visit to the Deutsches Museum, our friendly student helpers (Max and Eyleen) suggested that we go to the tower at St Peter's church. Though climbing of the tower was quite tiring, the effort is well-rewarded by the magnificent view from the top of the tower.

The highlight of the day was the welcome dinner at Alter Simpl. It is a great place, with a nice ambience and delicious food. We were first welcomed by the Dean of Physics of LMU, Prof Schenzle. He is a very friendly person, and took the trouble to translate the menu, which was all in German, for us. We really appreciated it. After great effort to decide and order the food, the food was finally served. Our jaws dropped to the table after seeing the serving size. It was humongous and we fought hard to stuff all the food into our stomach, although it was really delicious.

The night passed in laughter, but there was a big surprise in store for me. It was my birthday, and the people from LMU came to know that while planning for the welcome dinner, and they actually planned a surprise for me. My first birthday spent overseas was a wonderful one, with a delicious chocolate cake baked by Eyleen, a bunch of wonderful friends who sang the birthday song out loudly for me, and a birthday wish in German (from Chang, Chang Jian, Zhanjiang, Guo Chuan, Wen Di in the GIT 2010 group). I was really touched and thankful.

The night carried on with laughter till it was time to say goodbye. Professor Englert was very nice, and treated us to ice cream. Unfortunately, it started pouring when we reached the ice cream shop, and we all went back drenched.

6th June 2010 was a tiring, but happening and fulfilling day. I will never forget this day. Thank You.



Group photo at Alter Simpl

7th June - LMU Seminars, Nymphenburg Palace

Lynette Tay Wan Qing

The day started off at half past nine, after our usual buffet breakfast at our hotel. We headed to the U-Bahn station to take a train to the University station, Universität. We had to attend a lecture at 10am, which is about “Quantum Cryptography”. After the talk, we went to the rooftop of the building to have a look at the set-up and have a better understanding of how it works.



Sebastian explaining the QC setup

We were done by noon and headed off for our lunch at the Mensa. Our student helpers, Max and Eyleen, suggested that we could visit the Nymphenburg Palace at SchlossNymphenburg, which was rather nearby. We took the U-bahn and changed to a tram to reach our destination. On our way to the entrance, we were busy taking photos of the beautiful surroundings. It was really a pretty sight!



Group photo outside Nymphenburg palace



Nymphenburg palace

We purchased the entrance tickets, and also the audio guide at a discounted price due to group discounts. It was rather interesting to see how King Ludwig I built his palace, along with many other displays that were really impressive.



Posing with our audio guides

We were given free time to walk around and make our own way back to the university at 5 in the evening for another lecture, Colloquium Talk. It was given by Prof Serge Haroche (ENS, Paris) on “Fundamental Tests of Quantum Mechanics in a ‘Photon Box’ “. There were many German students and professors attending as well. There was an interesting action that we picked up from them—they were knocking on the table instead of clapping their hands for applause.



Inside Nymphenburg palace

After the lecture, it was dinner time. Some of us went for a dinner at a university restaurant just around the corner, while the others wanted to do some shopping. We heard that the restaurant served large portions of food at cheap prices, hence, we wanted to give it a try.

The portions were actually only reasonable and not as large as we had imagined. It had a menu that was almost identical to the one we had on the previous night for our welcome dinner. After dinner, the group separated and we each headed to explore the city further.



Our spicy currywurst dinner set

8th June - Max Planck Institute Plasmaphysik, LMU Seminars

Teo Shi Hua

This was our first day going to the LMU campus in Garching, which was really far away! (We managed to catch a glimpse of the famous Allianz Arena!) The campus there was really nice, with all the grass patches and slopes!



In a presentation at MPI Plasmaphysik

Grass patches and slopes outside Garching station

The picture above on the right shows us gearing up for a 3-lecture day in LMU! Our first lecture mentioned the ‘Tokamak’, which is a poloidal magnetic field created by toroidal plasma currents, and then we were brought to see the machine of interest.



Tokamak at MPI Plasmaphysik

Then it was lunch in the Mensa there. The layout is actually quite different from that of the Mensa at Universität and they used the “prisoner’s tray” as a plate!



“Prisoner tray” at Garching Mensa

It was quite a new and different experience for us as we don’t really have such practices in Singapore. Our student helpers, Max and Eyleen, had brought their own mat to sit on while we just sat and lay down directly on the grass. It was a little wet but it was still a good experience and it didn’t actually bother us a lot either. I was really glad that I also managed to find a lucky four leaf clover among the many clovers!



Lucky four leaf clover at LMU campus

After having our meal, we headed back to Universität for our second lecture of the day which was on DNA nanotechnology. It was quite interesting and something new to me, as he talked about the structures of DNA, and also about how it is applied in the structures we see around us.

Next, we had a short break before our last and final lecture of the day started, so we went to the grass patches where the students gather during their breaks and took a nap under the beautiful blue summer sky.



Summer sky taken from LMU campus, Universität

We were then all recharged for our third lecture for the day, which was on Cell Biophysics by Doris Heinrich. One of the more interesting topics she touched on was on the description of cell dynamics on the cellular level, the analysis of cell migration on flat vs. structured surfaces. Pillars were like cell attractors to the cells if they were already within the structures. Another take-away was about the chemotaxis of bacteria, which refers to the ability of cells to detect chemicals.

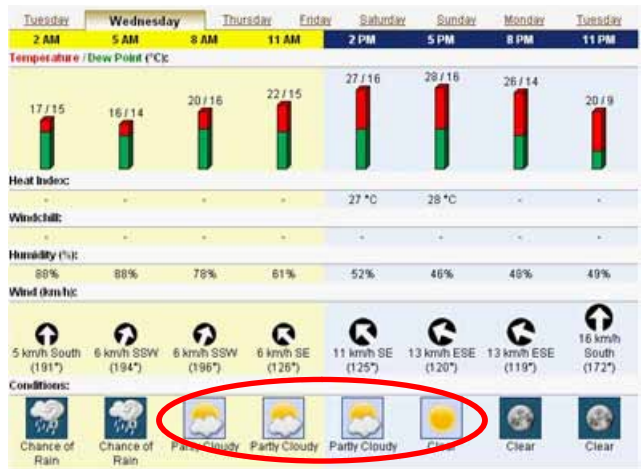
Following that, we just had our dinner before returning back to our hostel and calling it a day.

9th June - LMU Seminar, Allianz Arena, Ismaning Biergarten

Chen Zhanjiang

Probably one of the most important things to do in the morning in Munich would be to check the weather forecast. A visit to the Allianz Arena was scheduled this afternoon, followed by a visit to the majestic Olympic Tower at the Olympic Park. It was definitely great to have a forecast of sunny weather and clear sky!

The day started with an inspiring talk about statistical and biological physics. An appreciation of the application of physics to the field of biology was presented by Prof Ulrich Gerland.



Weather forecast for 9th June: A sunny day

Starting by looking at the movement of a single cell in reaction to its surroundings, interesting and profound insights can be extracted. A single cell is able to sense changes in its surroundings and process such information, which can be modeled as a change in the potential profile of the system. Next, we look into how the single cell reacts to the surroundings, which can be seen as a many-body interaction problem. Thereafter, the mechanism for response to the surroundings can be seen as a feedback control theory, where information from the interactions is processed and injected back into the cell to change its course of actions. All these happening in one single cell allows us to appreciate the complexity of human beings, and also allows our imagination to explore the advancement in the field that could be beneficial to the world.

Up next in the programme was a visit to the Allianz Arena, which is the home ground for FC Bayern Munich and TSV 1860 Munchen.



Soccer stadium from gallery seats



Allianz Arena

The stadium was built in 1972 and has a capacity of about 69,000. A guided tour was given and the design of the stadium was explained.

Sunbathing the grass to improve the durability of the grass. By sunbathing the grass, the durability is said to have increased, therefore reducing the need to replace the turf so frequently. This method is said to have save a lot of money in the maintenance of the stadium.



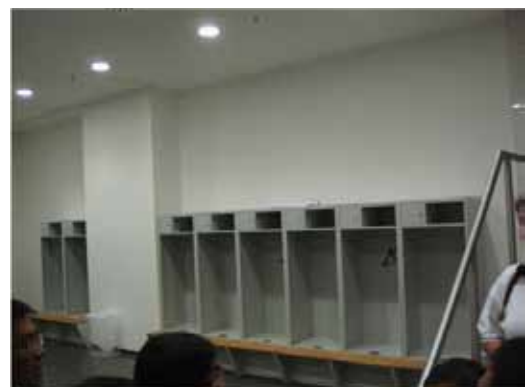
The official press conference room. With a capacity of more than 200 people, this is easily one of the largest conference rooms in a stadium.

FC Bayern Munich changing room. Each player in the team is displayed in a portrait. During a game, they would be using the cupboard below their own photos.



Massage and therapy room. This room is located just beside the changing room.

In a slight contrast to the FC Bayern changing room, the changing room of the visiting team looks much more neutral in terms of the design and colours.





The common area. This is the place where the teams first meet after emerging from the dressing room. The teams line up towards the tunnel and ready themselves for the grand entrance, emerging through a hatch that is normally closed.

Next stop is the Olympiaturm. It is located at the Olympic Park and stands at 291m. A lift was taken to 182m, at the speed of 7 m/s. A magnificent and breathtaking view of the city and beyond could be seen from the open air 360 degrees platform.



Olympic Tower



Olympic Park viewed from Olympic Tower

The day ended with a nice and cosy dinner at a biergarten at Ismaning, where a quiet village lies.



10th June - Research Reactor, Tandem Accelerator, MPI Talk

Loh Xing Yee

Today we went to Garching to visit a few facilities. We arrived in Garching much earlier than needed, so our guides Max and Eyleen gave us free time to roam around the train station, where a lot of wild flowers grew. Yarong and I became deeply fascinated with a dandelion growing along the sidewalk, and we tried to propagate its growth so that dandelions can grow everywhere in Garching. The weather was finally warm enough for us to enjoy the scenery without huddling under layers of clothing and scarves.

We soon came to the first facility, the nuclear reactor. As the nuclear reactor is highly secured, we surrendered our passports in exchange for a pass card. Photography was naturally prohibited. We were also required to put on a pair of odd plastic shoes over our own. We looked as though we had tied blue plastic bags over our feet. Our identities were scrutinized and after many identity checks, we had to go through another – the body check. Most of us got through fine, but Lokender encountered troubles. His fashionable belt had too many metal buckles, and so the metal detector had a merry time at his waist. The security guard (male) had to run his fingers under the waist of Lokender's pants to ensure Lokender was not carrying dangerous materials.

We were split into groups, and our group was led by a young woman who had a very clear delivery. The nuclear reactor visit was enlightening, as this was something most people cannot see easily. We were shown how neutrons are delivered, and how the systems were cooled in a large cooling pool. Neutron selections were done by the time-of-flight detectors, endearingly called "Toftof". After the visit we had to go through a radiation check to make sure none of us had become contaminated by radioactive particles. Thankfully, none of us were contaminated.

After lunch at a nearby student canteen, we went to visit the Tandem Accelerator. With low lying pipes and machinery abound, most of us found difficulty maneuvering around the building. For locations of experiments, indicators were placed. Paper mâché animals



Paper mâché snakes



Playing around with a model



The place for our last talk

were placed at strategic points. It was rather amusing spotting these brightly-coloured craft pieces, as it is not often one sees a goose or a snake perched on top of shiny machines.

At 4 pm, we made our way to a talk on “Particle Acceleration with Light” at one of the Max Planck institutes. The professor talked about plasmas and lasers, and later brought us to his laboratory after realizing most of us were interested in viewing it. Again, we had to wear plastic covers for shoes. After the brief laboratory visit, we set off back toward the city. Some of us went to the party organized by the Physics department in LMU, whereas some of us attended to more mundane but essential tasks – laundry and grocery shopping. I was part of the latter group, as housekeeping matters are important. I was also tired from the day of excitement and travel. The day was fulfilling as I managed to visit a few interesting facilities. The nuclear reactor and accelerator are facilities that I have learnt about before in class, but seeing them in reality is much more enriching.

11th June - LMU Lecture & Seminar, World Cup 2010 Opening Match

Thiang Guo Chuan

Thank god it's Friday! It's only 6.30am, but everyone's already up, getting ready to join a few hundred other LMU students at a Physics lecture by Roland Kersting. This lecture involved various experimental demonstrations of the electrostatics of matter. The style of instruction was not something that could be found in NUS, and was definitely eye-opening. Theory and experiment were coherently presented as two complementary components of Physics. The basic principles and techniques in electrostatics were presented on a blackboard, covering the properties of electric fields in conductors, the method of images, and some applications of Gauss' Law. This was followed by a number of breathtaking experimental demonstrations of these ideas. Most notably, the spectacular electrical discharge of a large capacitor drew a loud and appreciative round of applause from the students. An interesting geometrical proof of the addition law for capacitors wired in parallel was also described.



Roland Kersting



Stefan Hofmann

The second lecture of the day was delivered by Stefan Hofmann, and it was just as inspiring as the first one. He provided us with an animated and entertaining introduction to theoretical particle physics, taking us on a journey covering the Big Bang and early universe, the Standard Model, dark matter, dark energy, and the most perplexing open questions in Physics today. A memorable moment was his almost hysterical laughter after he reported that the vacuum energy predicted by the Standard Model was 34 orders of magnitude larger than that calculated from the observed acceleration of the universe. It was a dramatic reminder that even the most sophisticated

theories in modern physics are still incomplete. He concluded with a beautiful discourse on general relativity, which was a refreshing change from the usual textbook approach to the subject. Unfortunately, time was running short just as his passion for the subject was boiling over, which was a huge pity.

The afternoon would be dedicated to the other thing Germans are most passionate about – football. We caught the opening match of the 2010 World Cup between South Africa and Mexico at a large biergarten, complete with the mandatory pretzels and one-litre mugs of Bavarian beer. The match was admittedly a bore, but the experience of enjoying an afternoon at the biergarten made up for it. One can only imagine the noise and excitement there when Germany opens its World Cup campaign in a few days time. The football fans among us cannot wait!



Watching opening match at biergarten

12th June - Dachau City & Concentration Camp, Campfire

Lokender Singh

On Saturday, we went to the nearby town of Dachau. Escorted by an old lady guide, we surveyed the various structures, buildings and lanes within the city that emanated an aura of the ages- about 1200 years to be precise. A small, historic town, I guess that at first look, Dachau would appear peaceful, serene and even insignificant compared to the big cities. However, this town has a dark past. A past that it is not proud of. A past arising from the governance of Hitler in Germany.

We visited what is known as a concentration camp. Shall not go into the long elaborate details, but here's a summary all the same- Hitler had the idea of confining all his political opponents so that they would not oppose him when he reigned dominant. A concentration camp was set up to house these 'outlaws'. As time went by, people who committed crimes were also admitted into such concentration camps. Hitler had ideas of a superior and contrastingly inferior race. Soon enough, homosexuals, Gypsies and most prominently, Jews, were admitted into camp.

The conditions in which the people lived are beyond comprehension. Many died of diseases, many died of torture, many died of hunger, many died of pain. Many were 'gassed' to death in gas chambers and subsequently cremated in a facility on the camp itself. The Holocaust. The concentration camp inflicted a damp, dull feeling within the most of us. To think that the ground upon which we tread was the same ground where millions had died before their time. The statue erected by the survivors of the atrocious period said it all: Never Again- meaning to say, the world can never let such an era dawn upon it ever again.



A glimpse of Dachau city

Formula written with rocks before concentration camp guided tour



At the entrance of concentration camp. Inscription means work makes one free.



The lane between the museum and Dachau prison, where most murders took place



Crematorium at Dachau concentration camp



Group photo taken at the entrance of concentration camp

A civilian statue near crematorium. The words below means "To honor the dead and warn the living".



On a higher note, the second part of the day allowed us further immersion into the German culture. We went to Eyleen's house and her grandmother's house to experience the living conditions of present day Germans. After the visit, we headed down to her church for a campfire. It was great fun. All of us huddled around the fire and sang camp-fire songs. Guo Chuan even serenaded everyone with his exceptional guitar playing skills.



Group photo taken at Eyleen's house



Group photo taken at campfire

13th June - Münchner Residenz, Lake Starnberg, Buchheim Museum

Alvin Goh Jun Hon

A quick breakfast today, as we set out early for a tour of Die Münchner Residenz, the former palace of the Bavarian monarchs. Having been in Munich for nearly two weeks touring castles and museums, I had grown accustomed to the rich architecture and cultural landscape. Nevertheless, the grandeur and magnificence of this palace managed to take my breath away once again – rooms full of precious stones and jewels set in richly wrought crowns and weaponry, furniture engraved with intricate carvings on every visible surface, eye-watering gold and silver in all directions, ornately designed rooms and fixtures... It was a sight to behold indeed!

Besides the sheer opulence of the place, there were some unexpected collections of Chinese and Japanese porcelain, Imari, and lacquer objects. That was my first encounter with explicit evidence of the trade between Europe and Asia in the 17th century.



Exhibit at Münchner Residenz



Royal crowns, scepters, swords for the royal family



Hallway at Münchner Residenz

Thereafter, we departed for Lake Starnberg at around noon, where we boarded a ferry heading toward Bernried. We had a sumptuous lunch on board, and spent the time enjoying the amazing lakeside view... at least, until it started raining and we were forced indoors until arrival.



Boat ride in Lake Starnberg

After a pleasant walk amidst lots of greenery, we arrived at the Buchheim Museum where we would again be taken around by a guide. The streetlamps seemingly constructed from oddments foreshadowed the curiousness of the art that we would soon see. The main highlight was Lothar-Günther Buchheim's private collection of works from the Expressionist movement that originated in Germany. While some preferred the traditional style of landscape paintings and portraits that we've been seeing the last week, I at least enjoyed the vividness and emotions of the Expressionist artists. The knowledgeable guide played a large part in our appreciation of the works as well, providing much needed background about the museum and selected works. In addition to these works, there were also Buchheim's rather large collection of glass paperweights and puppets, among others.



Street lamp outside Buchheim Museum

With that, the official programme for the day ended. But of course, no one was about to miss Germany's World Cup opening match later in the evening! After heading back again by boat and train, a few of us grabbed dinner to go at Hauptbahnhof and headed to the nearest (and second largest) beer garden to join in the excitement! And what excitement there was! Fans cheering, celebrating, dancing... the roar of the thousands of people was simply staggering! By the end of the evening, Germany took a 4-0 victory over Australia, and we returned to our hostel with our ears ringing.



Car exhibit outside Buchheim Museum. All items used are trash and unwanted items.

14th June - LMU Talks, Jazz concert in the “Unterfahrt”

Tan Jun Kai

Today, we had our breakfast as usual at the Euro Youth Hotel, and left for the faculty of Physics at the Universität. There, we listened to a lecture by Harald Lesch on Astronomy and Astrophysics. He introduced us to many ideas about the universe, including the theoretical requirements for the formation of a black hole. The talk was, however, rather general and not really stimulating. Despite having difficulty staying awake, I learnt quite a bit from the lecture.

After a lunch break at the Mensa, we went back to listen to a talk on about Systems Biophysics by Dieter Braun. The talk was about emulating the flow of liquids to mimic that in blood vessels, such that the physics of various chemicals within blood vessels can be explored. It was a uniquely interesting idea, stemming from two major fields of science.

The last talk for the day was on Elementary Particle Physics by Otmar Biebel. He showed us a presentation on the Large Hadron Collider, and briefly explained the purpose of such a powerful collider. He also showed two interesting clips made to explain the various recording instruments found within the detector building, which was quite entertaining.

After a tiring but enriching day of lectures, we had some free time for dinner. My clique and I decided to try out some Asian food that was recommended on a brochure, in a restaurant called Kim Phat. However, due to time constraints and not being able to locate the restaurant, we settled for another Asian eatery. It was there where we finally had the chance to eat rice in about 2 weeks. Though nostalgic, the food was only decent despite the much higher costs as compared to that back home. It was probably catered to the local tastes.



Before the start of Jazz concert

Finally, as the night approaches, we met up with Prof Englert at the Unterfahrt, which is an underground bar, to listen to a jazz concert by the Joe Haider Jazz Orchestra. While relaxing in the bar and drinking many jugs of LöwenBrau Radler, the orchestra played piece after piece of jazz, complete with solos each for the different instruments. The entire jamming session lasted 2 hours, with a small break in between for the musicians to chill out and get some beer. As an orchestra, the music was fantastic, with the members all in sync with each other despite the flexibility of jazz music. The solos were also well played, with each member exhibiting his own flair and style. I felt that the best part of the concert was the solos from the 4 saxophones, playing one after another. It was a gripping performance, full of vibe and a wonderful technical display over the beautiful tones of the saxophone. The concert was, by far, the highlight of the day.



Jazz concert in progress. The pianist gave his thumb up to one of the trombonists.



The 4 saxophonists playing one after another.

15th June - German Aerospace Centre, Farewell Dinner

Chang Sheh Lit

It was the last day in Munich and it started as a rainy day. We wore our jackets to keep ourselves warm and set off for German Aerospace Centre (DLR) with Max. We waited for Eyleen at Weßling train station and reached the centre by bus at around 10am.

A public relations officer from DLR welcomed us at the entrance and we were brought into a seminar room for their talks on volcanic ash measurements and satellite meteorology. The recent volcano activity at Ireland in April-May had disrupted the European space for days, and this had aroused their interest in the measurements involving the movement of volcanic ash particles, the coverage and constituents of volcanic ash. The talk on volcanic ash measurements was rather general, as it had only started recently. Their motivation for studying volcanic ash was due to the hazards it brought to aviation, vegetation, animals and agriculture. In particular, aviation hazard was an important issue as it has caused a disruption in European air traffic. In fact, I can still vividly remember that my honours year project viva was held during the examination week because of that disruption. The following talk by satellite meteorology was quite technical, and most of us were on the verge of sleeping. The basic idea was to use satellites to collect visible light and infrared radiation signals to do the imaging for the clouds above Europe and Mediterranean Sea. The manipulation of signals could be used to tell the type of clouds, land and vegetation.

After the talk, we were brought to their hangar where they placed their research airplanes, Vulcan and HALO. The plane Vulcan is being used for volcanic ash measurements and observations. The plane HALO was just newly completed and it will start its measurements this coming summer. We were glad to have one of the pilots, Robert, show us the planes. He showed us where the detectors are placed in the planes and how measurements are being collected by scientists on the planes.



Vulcan - the volcanic ash hunter



Group photo with HALO

We had our lunch at the canteen in DLR and we headed to visit the German Space Operations Centre (GSOC). We were welcomed by one of the engineers and he briefly showed us how the centre operated and their current projects. They monitor the astronauts' activities on the space station. There is a fixed timetable for the astronauts to follow and they are supposed to exercise 2 hours at the station to prevent loss of bone density. The control centre looked similar to what is being shown in movies involving space operations, just that it is of a smaller scale.

We went back to Munich city after the visit at GSOC to do some shopping before we headed for our farewell dinner at Zur Brez'n. We reached there at around 8pm, and we were in our "team jersey" – the NUS Dri-fit t-shirt. Prof. Schenzle, Prof. Englert, Mrs. Bernadette, Prof. Englert's son, Max, Eyleen and 18 of us had a good meal at the restaurant. After Prof. Schenzle had his meal, Max and Eyleen gave out garlands made up of flowers with colours on Germany flag and boxes of Lego set to everyone of us. I presented our gifts of appreciation to the key people who organized and coordinated the trip after I gave a speech. We gave Max and Eyleen group photos that were taken during the trip and they liked them very much. We enjoyed ourselves very much during the farewell dinner and it ended with a glass of fruit wine (alcohol content 40%). Some of us shared a glass while I got myself a cherry brandy, courtesy of Prof. Englert. The brandy was really strong and I managed to finish it in sips.



Group photo at Zur Brez'n. Check out the number of guys in the jerseys, we have enough men to form one soccer team.

The last day in Munich was really a fantastic one, and I believe everyone would have liked to continue to stay for a few more days, if the weather turned well. Everybody went back to the hotel with mixed feelings as we had to pack our luggage to travel to Göttingen town for the second part of our immersion trip the next day.

16th June - Arrival in Göttingen, Observatory at GAU

Kong Pei Shan

As I was seated in the high speed train departing from Munich and looking out of the windows, my heart was filled with a mixture of feelings. Sadness and anxiety appeared to be among the top emotions that I faced. Why sadness? I searched through my heart and pondered deeply and concluded that it must be due to the strong reluctance in me to depart from Munich – a city filled with wonderful people and scenery, to head for Göttingen.

I could still vividly remember the events of two weeks ago, on the 3rd of June, when I bravely bid farewell to my family and independently embarked on a school immersion trip to Germany. In about 12 hours' time, I had reached Germany! Then, I was immensely excited as it was my first independent overseas trip, one which was without the 'restrictions' of my family members. However, the moment we arrived at Munich, we were confronted with a merciless and apparently unwelcoming weather. In my heart, I thought that the chilly wind definitely had the intention of blowing us all back to Singapore. Nevertheless in the following days, we busily participated in the series of events that had been arranged for us and this forced me to forget about the cold weather. It was also indeed this plethora of activities that developed my strong attachment to Munich.

During the two weeks stay in Munich, together with my 'hyperactive' seniors cum friends, we played extremely crazily, doing things that I would have never dared to do in Singapore. Although I do not deny that the lectures were inspiring, the events that were most memorable to me were those that were conducted outside lessons. Together as a group, we spent a cold night at the famous Allianz Arena Stadium watching the changing of the colour of the romantic lightings, we swallowed the bitter beer and played silly finger games to entertain ourselves at the beer garden, we visited cosy homes and cuddled round a campfire under the mild drizzles of the night, singing German songs till the wee hours even though we were barely keeping our eyes open and even watching the opening game of the World Cup. And definitely not forgetting, we shopped till our legs almost gave way and yet without any tinge of regret! I loved the scenery, I loved the people, I loved the nightlife, I loved the culture and the history and I loved Munich! However, good things always have to come to an end and thus I was on the train to Göttingen. Besides the sadness, I was also feeling a strong sense of anxiety. This strong sense of anxiety stemmed from the cold and unpredictable weather that had been forecasted. Being a girl whose hands will freeze even at the slightest blow of cold wind, I was truly afraid and highly unwilling to be faced with another unbearable time of cold weather. I was trying really hard to suppress my feeling of fear.

After approximately three hours of a train ride, we finally arrived at Göttingen. Upon stepping into Göttingen, one immediately sensed the sharp contrast between Munich and Göttingen. Unlike Munich which bustled with activities; land full of buildings, offices and shopping malls, what mainly appeared in Göttingen were low houses, large grasslands and scenic nature. The atmosphere in Göttingen is in sharp contrast to Munich. The pace of life in Göttingen is definitely much slower and probably more relaxed as compared to

Munich. And importantly, and fortunately, the weather upon our arrival in Göttingen was neither too cold nor too hot. The welcoming sun coupled with the slight breezy wind was a perfect match that seemed to warmly embrace us on our first day of arrival in this foreign land. Then we boarded the taxis and headed for the Mariaspring Hostel. Mariaspring Hostel is surrounded by large and magnificent grasslands, low hills and patches of forested areas. Instantly, one's soul was calmed and energized. What a wonderful place for retirement, I thought.

In the night, we were brought to the Institute of Astrophysics where we were introduced to the working procedures and activities of the department. We were introduced to the history of the Astrophysics buildings and we were shown the various instruments that had developed since history that were used for stargazing. Astrophysicists were engaged in producing a catalogue of positions of stars, and one of the observatories had Carl-Freidrich Gauss, the famous mathematician, as the director! We then proceeded up to the highest level where we manipulated the telescope for viewing the sky. Using the telescope, we first observed certain planets, followed by the surface of the moon, and the red and blue binary stars. Definitely, this was once in a lifetime experience. At the rooftop, the view of the sunset was magnificent, watching the sun setting sent a warm and cosy feeling into my heart. Using the image of the sun setting as the background, we took many memorable pictures. Soon night fell and we had to depart from the Astrophysics building and we headed back to our hostel for the night.



Magnificent nightsky at the rooftop

The 16th of June has indeed been a tiring and emotional day for all of us. Leaving Munich and arriving in Göttingen with luggages half the size of our bodies was indeed taxing and draining for most of us. Soon, the lights in our rooms were out, and we cuddled warmly into our blankets. Hopefully, we can sweet dreams that warm our hearts in this cold and chilly weather in Göttingen.



Looking through the telescope



Romantic sunset



What is this planet?
(Photo taken from
telescope)

17th June - Göttingen city, GAU Talks

Wen Di

This was our second day in Göttingen. We first had a welcome talk by Dean of Physics. Georg-August Universität (GAU) of Göttingen was founded in 1734. It is associated with 45 Nobel Laureates, including Max Planck and Werner Heisenberg. Other notable physicists like Lichtenberg and Gauss were also from the university. As later introduced by the tour guide during the city tour, Göttingen is a city of science, with remarkable achievements made by generations of scientists. An example would be Lichtenberg, one of the earliest experimental physicists. Research in Faculty of Physics mainly focuses on astrophysics, geophysics, theoretical physics, particle physics, biophysics and complex systems, condensed matter physics and material physics.

In the morning we had a guided tour in the centre of the city. Göttingen was very much different from Munich. It did not have modern infrastructure like Munich. Instead Göttingen has a characteristic small town setting. I would say the city was a beautiful garden built in and around the university. We visited the original town hall. It was built in a medieval style with paintings on the walls describing the function of the town hall. In front of the old town hall was the sculpture called “the goose girl”, the most symbolic figure of the city. In Göttingen, once the students get their PhD, they will go and kiss the goose girl, according to tradition. However, this action became illegal because students used to get drunk on the day of receiving their PhD and made a lot of noise at night. The town decided not to let the students gather and kiss the goose girl. We also visited the old university building with a student jail. The student jail was for those who disobeyed the school rules in the old days. Interestingly, it became a fashion for students to break the rules and go there. Part of the reason could be that the conditions there were not bad at all and they could skip school.



Photo taken with a statue in city



Photo taken with statue of Benjamin Franklin



The goose girl at the Göttingen city which PhD students will go and kiss after receiving their PhD



One of the 4 rooms in the Göttingen university jail

In the afternoon we had a talk on ion-beam mixing by Prof. Lieb. Ion-beam mixing is a more efficient atomic transport made through an interface than direct high-current ion implantation. Fe/Si is an ideal system for using nuclear methods. Professor Lieb explained the principle of ion-beam mixing. We learnt why Ballistic mixing was too weak and why spikes were needed.

After the talk, we called it a day by spending our free time touring the remaining parts of the Göttingen city.

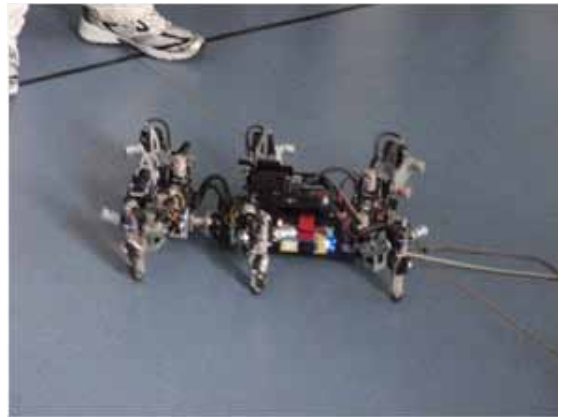
18th June - GAU Talks & Accelerators, Göttingen Nacht der Kultur

Tan Da Yang

On 18th June, we had three interesting talks. The first was by Prof Osipowicz on KATRIN, which is an experiment for the mass of neutrino; the second, Prof Quadt on current high energy physics; and lastly, a talk on Robotics by Prof Wörgötter.

In the first talk we learnt that neutrinos were assumed to be massless from the Standard Model, actual investigations, however, provided strong evidence for the otherwise. Since the mass of the neutrino is thought to be extremely small, it implies that a device such as KATRIN that is able to check the absolute value of electron neutrino down to $0.35 \text{ eV}/c^2$. The talk on current high energy physics mainly circled around the topic of the Large Hadron Collider and the Higgs Boson.

The talk on robotics provided an interesting overview of this multi-disciplinary field, as well as its implications. One particular point that was made was the association with the human motor and the robotics motor. It was mentioned that it might take quite a long period for the robotics motor to react like a human motor, because of the lack of the complex feedback systems. However, certain investigations have been made and significant results have been achieved. For instance, a robot was designed to climb up slopes. In such a robot, the feedback mechanism allowed the robot to adjust its body every single time it failed to climb the slope, until to the point where the robot had adjusted its body sufficiently to climb to the top of the slope.



The 6-legged robot

After the talks, we had a guided tour to a accelerator in the University by Prof Uhrmacher. The working principle is pretty much similar to other accelerators, but the external design is one that is particularly interesting. Unlike the other accelerators elsewhere, much effort has been put in to make the laboratory aesthetically pleasing.



Commutation relation between position and momentum



Colourful paintings on the wall

In the evening, we went to the Nacht der Kultur in the town centre. It was a night where artistes gather at the town centre and perform. Performances ranged from classical to rock, and there were exhibitions as well. We went to the Picasso exhibition in one of the art galleries, as well as a rock performance at Jange Theater.

All in all, the night was particularly enriching with all the activities that we had. Be it be a physicist wannabe, or a cultural fanatic, we all managed to find something do on June 18th. We all enjoyed the day very much with such interesting line-up of events.



The rock concert we attended

19th June - Excursion to Göttingen fortresses, Hannoversch Münden

Liew Sing

It was a cloudy day. Nevertheless, it did not kill the fun of our GIT 2010 Day 18, which was 19 June 2010, Saturday.

The “fun” was started with a talk entitled “Introduction to Local History at the Occasion of a Visit to Bury Adelebsen”, which presented by Dr. Uhrmacher in the conference room of Mariaspring- after breakfast- at 9:30am. The main contents of the talk were focused on the relationships between Romans, knights and silver. As Göttingen is near to the Harz and was rich in silver, it became one of the Pfalz, which was one of the most important territories of Palatine. Therefore, many castles were built in order to collect tax of silver, and to protect the traveling king as well as the flow of silver to the west.

The talk was ended at 10:45am and, immediately, we were heading for Burg Plesse – one of the castles – which is the nearest to Mariaspring.

The scenery from the castle was spectacular and we really enjoyed the view very much.

Right after Burg Plesse, we headed for Ruine Hardenberg but, unfortunately, the castle was not open on that day.



Group photo at Burg Plesse



My lunch at Da Sergio (pasta)

At 12.25pm, we had our lunch at Da Sergio and then we headed for Burg Adelebsen – another castle – at 1:35pm.

Although the wooden staircase structure of the Burg Adelebsen was very old and dirty, we really had a great time on top of the tower of the castle, enjoying the spectacular scenery as well as the warm weather.

Last but not least, at 3.15pm, we headed for Hannoversch Münden. In Hannoversch Münden, we saw a very grand town hall, and the old houses there were very unique and beautiful.



Burg Adelebsen



Hannoversch Münden's town hall



Hannoversch Münden's old houses

20th June - Day Off: Grave Matters and Duck Trails

Yang Yarong



We love Göttingen!

After two consecutive weeks of rushing around like mad in Munich and a few days in the quiet, sleepy and idyllic town of Göttingen, we were given a day off. Everyone of course took the opportunity to sleep in late.

Urm... okay, considering that the seniors, together with Gwen, Loke and Pei Shan woke up at 3am in the morning to go hiking for the sunrise; and the year 2s probably rose early to prep for their trip in Hannover, let me restate that... Yoke Leng, Xing Yee and I took the opportunity to sleep in late.

Gosh, we sound like such lazy people when I put it that way, haha, but we had other plans for

the day. These plans, having been made in Singapore, were simple (also a tad disturbing)—go famous scientist grave-visiting and pay our respects. We all dressed in sombre colours to go with the whole cemetery thing, except that Xing Yee donned a bright red jacket. XD

By the time we'd finished washing up for breakfast (around 7am) though, Gwen was already back and comatose on her make-shift bed which had been dragged over to Pei Shan's room via MYSTERIOUS CIRCUMSTANCES the night before. We laughed at her for a bit before waking her up so she could have breakfast, and then the five of us trooped down to the normal feast—eggs, assorted cold cuts, cereal and interesting side dishes. Yummy.

Having some time before we were scheduled to set off, I ran around the place with Xing Yee trying to scare people in my all-black outfit, complete with black veil. The only people I succeeded in scaring, though, were Gwen (playing table tennis)—and the Mariaspring cleaning lady. OOOPS.

We were to set off at 10am, and around 9.45am we started to try and contact the Night and Day taxi company, which was the only way we could get around Göttingen quickly without getting lost. Cue ten minutes of running around trying to find a phone from which we could call cheaply, culminating in borrowing Loke's handphone. I then tried calling for a taxi, but it didn't work because the operator didn't speak English and I didn't speak German. It went something like:



My outfit is not scary enough

OPERATOR: German-german-german.

ME: Urm, is this Night and Day Taxi Services?

OPERATOR: Ya!

ME: I'm a student from NUS...

OPERATOR: Ah.. German-german-german-german?

ME: Urm, can I order a cab?

OPERATOR: German-german-german-german-german-german!

ME: ...From Mariaspring?

OPERATOR: German-german-german-german-german!?!

ME: Urm..I don't understand ...I'm sorry...

OPERATOR: (cheerfully) Okay, Bye! *cuts line*

ME: *stares at dead phone in astonishment*

Loke then took the phone, redialled the number, and through the use of single words only (Taxi! English! Mariaspring! Account! NUS!), managed to get a taxi. Five minutes later, a taxi arrived and we set off only about 3 minutes late. The lady driver seemed quite shocked when we told her we wanted to go to Stadtfriedhof, the main cemetery in Göttingen. I suppose it's just Not a Thing Tourists Would Do. But we weren't any ordinary tourists—we were Physics Majors.



Stadtfriedhof—peaceful, beautiful, and just a bit creepy.

Strange looks aside, she was very nice to us, and indicated the direction in which we should walk or bus if we wanted to head to town later. We thanked her, signed the tab, and then proceeded into the cemetery.

It was really beautiful, all green and lush with stone headstones scattered here and there. I'm not being morbid, really, some of the headstones were very artistic and could have passed for sculptures! Okay, but there was a tiny part of morbid interest that somehow made the cemetery look even more beautiful. But that was just a tiny part. Really.

Now that we had gotten to Stadtfriedhof, we had to go look for the graves that we wanted to visit. Earlier that morning, we had gone wild-flower picking to lay on the graves of the various physicists and mathematicians, but most of the flowers had dropped, and so we decided each to take one flower and pick a physicist or mathematician to offer it to. Xing Yee picked Schwarzschild, Yoke Leng picked Max Planck and I picked Hilbert.



Xing Yee (sans jacket) and Yoke Leng beside the chapel



Xing Yee pays her respect within Schwarzschild's radius

Armed with the white wildflowers, we then wandered around looking for our first marker, a grave of a mathematician named Felix Klein, which would assure us we were heading in the right direction. After a few turnabouts due to inaccuracies in the map, we managed to locate his grave. Muttering “Sorry, Klein”, and giving him a half-hearted bow, we then zoomed off to our first chosen grave—Schwarzschild. Xing Yee placed the flower before his grave, stood up and then bowed. First mission accomplished!

Emboldened, we continued onwards into the graveyard. This time, things were a lot creepier, because we couldn't tell where we were any longer, because not only was the map was inaccurate, it was

disjointed. We just went by gut feel forward. (We spotted the signposts to Nobelrondell only after we finished visiting the graves.)



Yoke Leng radiates respect as she bows to the Nobelrondell, including Max Planck's name.

Thankfully, we soon spotted the Nobelrondell, which was a huge marble-and-concrete thing listing the names of all the Nobel Prize winners buried in Stadtfriedhof. Yoke Leng decided to place her flower on the plinth in front of the Nobelrondell, after which we went round to each placard and bowed deeply to those whom we recognised, or who were Physicists.

We were under the delusion that these were the graves, but we swiftly learnt otherwise en route to Hilbert's grave, when we spotted Planck's actual grave. We then decided to bow at their actual graves, giving the more prominent Physicists longer bows. I think any Germans who spotted us would have concluded that Asians are INSANE.

Well, at any rate, we considered the Nobelrondell-flower-offering to be sufficient, and thus mission two, ACCOMPLISHED.



Max Planck's grave



I placed a flower in Hilbert's space

We then quickly proceeded to our final stop, Hilbert's grave. It was easier to find this time because the map was easier to interpret once we had gotten our bearings, based on Planck et al.'s graves.

We all bowed to his grave, and then I went forward with the last flower, placed it on the concrete area before his grave, and then stood up and gave his grave another deep bow.

Mission three—ACCOMPLISHED.

Hopefully our Quantum Mechanics will improve next semester after we've paid our respects to these great scientists!

After the slightly tiring visit to the graveyard, we made our way out of the cemetery and to the bus stop right outside it. We were actually intending to bus down to town, but when we realised that we'd missed one five minutes ago; and the buses came in forty-five minute intervals, we decided that we might as well walk.

We headed towards the more built-up areas, reasoning that town=built-up areas; therefore as built-up density increases, distance to town decreases. Amazingly, this worked out fine, and we were in town within less than half an hour, cold and hungry. We had a delicious lunch at an Italian restaurant near the Goose-girl fountain, and there we discussed what we should do next. We realised that Albanifriedhof, where Gauss was buried, was within walking distance, and it had a pond. Since Xing Yee wanted to go and feed birds, and the park was right beside the cemetery, we decided, hey, why not, let's go!

So we walked towards Albanifriedhof, and within 15 minutes, we found it. More precisely, we found the duck pond.

Cue happy squeals from Xing Yee as she pulled out the fragrant slice of bread she'd da-baoed at breakfast for this very purpose. The ducks, sensing the impending food, waddled quickly out of the pond and surrounded her with expectant looks in their beady eyes.



The ducks in Göttingen are a lot more aggressive than those in Munich. They fought each other for the crumbs of bread we threw in, unlike the more placid ducks in Munich's Englischer Gardens that just quacked at us and waited patiently for their share.

Xing Yee prepares to feed the ducks, while they gather around her

After feeding the ducks, we were feeling a little tired and not looking forward to having to comb through a huge cemetery for a grave we didn't even have a map for. By general consensus, we gave up on Gauss's grave, and just bowed towards the vicinity of the cemetery (Since anyway the flux of bowing near his grave and away from his grave would remain the same, as the area of his gravestone remains constant, we reasoned.)

We decided to go back to town to buy dinner, and then from there to taxi back to Mariasprings, but not before we indulged in some SWINGING in the playground beside the pond! Yes, we're like kids, I do realise, but it's fun to let your hair down sometimes! You can't always be serious.

Another thing that amused us greatly was having the silly ducks come out of their pond and waddle around the playground, staring at us with hopeful looks in their eyes, even as we sped past their heads on the swings and told them “We don’t haaaave any more breaaaaaad!”



Having fun swinging!

Having refreshed ourselves with this brief kinetic interlude, we then proceeded to walk back to town, where Yoke Leng got her fill of her craving—her beloved ice cream—and then we purchased bread and tarts and pie for our dinner. We’d done everything we’d set out to do for the day, other than Gauss. (Sorry, Gauss...)

And so, feeling accomplished, we then borrowed Yoke Leng’s phone and called for a taxi to Mariasprings. I was mentally preparing myself to communicate without either using English or miming, but to my great relief, the operator spoke fluent English and as a result, we got our taxi with no problems at all!



All hail our dinner!

Arriving back at Mariasprings, I collapsed into my bed, not to be heard from again until around 4pm. I suppose staying up late for the last two weeks contributed to my exhaustion; I’m really not used to having that little sleep. We then proceeded down for a bit of leisure (kegler and foosball) before having dinner with Gwen and Peishan, who believe it or not, had with the seniors, hiked from Mariaspring all the way to town! I wasn’t sure whether I should applaud them for heroism or check their temperature to see if they were running high fevers and were as a result, delirious.

The final item of the day was to prepare thank-you bottles for the various people who had made our stay in Göttingen much easier and also more enjoyable—Prof. Oscipowicz, Dr. Uhrmacher, our guide, Saman. (We nearly forgot about Mrs. Hamdi, but managed to prepare a gift for her before we left, phew.)

Unlike in Munich, where we had the luxury of buying card-paper in the departmental store to decorate (Xing Yee did the illustrations and I did the wording); in Göttingen, because all the shops were closed, we had to improvise! Amazingly, the gifts in Göttingen looked much better than those in Munich, I suppose because we were desperate and had only our creativity to depend on. Then it was to bed and to sleep, and because I didn't have a dream involving spiders or the eating of them ; I don't recall any of it, and I will (finally) end my extremely long diary entry about a day (off) in Göttingen.

P.S. I heard that sigh of relief. Watch it, you. XD

20th June - Day Off: Hamburg trip

Teo Shi Hua

Our free day~! We actually decided to spend this day in Hannover at first because Hamburg was too far and the train ticket was too expensive but we found out from the train conductor that our weekend train ticket was able to travel to anywhere within that day, so we went to Hamburg by the metronom double-deck train which took about three and a half hours.



Taking the metronom double-deck train to Hamburg Hauptbahnhof

Upon reaching Hamburg Hauptbahnhof (Hamburg Central Station), we checked with Tourist Information and realized that all the public transportation modes were free today and that the shops were opened because it was a special Sunday, meaning we were really fortunate! We only realized that it was a 'Shopping am Sonntag' (Shopping on Sunday) and 'Autofreien Sonntag' (Auto Free Sunday) after we walked around the area – at the harbor and the shopping centre, Europa Passage, near the S-bahn station, Rathausmarkt. We bought our lunch at their 'food court' before we continued our exploration of the area.



‘Shopping am Sonntag (Shopping on Sunday)



‘Autofreien Sonntag’ (Auto Free Sunday)

There were people rollerblading and cycling on the road and they had interesting ‘trishaws’ too!



Hamburg Chamber of Commerce



Spotted Singapore at the Commerce Trade Centre



Interesting ‘trishaws’

Next we headed towards the Saint Nikolai Memorial (for the Victims of War and Persecution) and took the panoramic lift up the tower to get a bird's eye view of the city.



Saint Nikolai Memorial



Picture of lift at the memorial, note the height is 75.94m

Following that, we went to the Modelleisenbahn Wunderland, which is a miniature model of a few places such as America, Switzerland and Harz.



Modelleisenbahn Wunderland



Group photo at Hamburg

It was really cool since they were very detailed and they simulated day and night with moving model trains and vehicles.



Some models inside the Modelleisenbahn Wunderland

After that we headed back to Göttingen after buying our dinner from the S-Bahn station to eat on the train and that concludes our wonderful day at Hamburg!

20th June - Day Off: (Mis)adventure at the Hurricane Festival

Thiang Guo Chuan

Festival-chasing is an essential part of a true music fan's life. The notion of a real music festival is probably unfamiliar to Singaporeans, simply because there is no appropriate venue to hold one, nor is there sufficient interest within the rather sterile musical landscape in Singapore. If you have never heard of Woodstock, Glastonbury, Rock Am Ring, Lollapalooza or Reading, here's a brief summary of what a major (rock) festival entails.: You travel with a group of friends to the festival site, pitch a few tents, set up your cooking area, bring out a few cartons of beer, and then enter the muddy performance area to enjoy about three straight days of musical nirvana from dozens of the best bands in the world. Essentially, it is a pilgrimage for music.

By a stroke of fortune (pun intended), the coolest-band-in-the-world, the Strokes, was headlining the Hurricane Festival on 20 June, the free day allocated to the GIT participants. This writer was not going to let this once-in-a-lifetime opportunity slip by, and decided on impulse to make a lonely journey through Northern Saxony from geeky Göttingen to sleepy Scheeßel.

Having somehow made it to Scheeßel in one piece, I took a hike to the festival site, where tents had already been pitched as far as the eye could see. Practically everyone was drunk and dirty, which is hardly a surprise, given the 1 Euro per can Becks beer that was on sale. If the tentage area was crowded, the performance area was absolutely packed.



Scheeßel, a 1200 year old village 70km Southwest of Hamburg, population 12000



Tents of every colour and design imaginable. No Singapore flag in sight.



The Stone Temple Pilots, strutting their stuff on the Green stage.



The lineup

The first night was rounded up by Massive Attack, a British experimental trip-hop duo. Being immersed in a sea of bouncing bodies ensured that I was well-protected from the chilly winds. After the wonderful live performance, however, the bodies dispersed into their individual tents, and I was left to my own devices, namely, a humble bedsheet. This was clearly insufficient for the cold weather, and in the end, I spent the night in the Bremen-Hamburg train.

21st, 22nd June - PhyWe trip, Depart from Göttingen, Munich

Chang Sheh Lit

The last day in Göttingen started with a trip to PhyWe company. PhyWe is a company specializing in providing apparatus and equipments for science education. The equipment can be used in class demonstrations and laboratory experiments.

We were welcomed by both the marketing manager who is in charge of the Asia-Pacific region as well as the manager of the service department when we reached the conference room of PhyWe. The marketing manager introduced the company to us in a corporate manner, and the service department manager brought us around the PhyWe showroom after that. Inside the showroom, there were a lot of apparatus which are used for class demonstrations and lab experiments.

The service department manager showed us the cloud chamber which PhyWe had designed recently. This cloud chamber contains saturated propanol vapour and radioactive radon gas. The radioactive radon gas decays to give alpha and beta particles, whose tracks are shown by the condensation of propanol vapour. After that, he introduced us to other demonstration tools related to physics, chemistry and biology. Besides demonstration tools, he also showed us some experimental setups which are being used in our teaching labs, for example those for X-ray diffraction, X-ray fluorescence and the Stern-Gerlach experiment.



PhyWe cloud chamber: Thick tracks are due to alpha particles while thin streaks are due to beta particles.

After looking at the items in the showroom, he brought us to see their production facility. PhyWe manufactures their products at a small scale, and hence they do not hire many workers in their production line, but the workers are highly skilled. Inside the production facility, there is a repair room which repairs old and faulty devices. The prototypes of their new products are prepared and assembled in another room.

PhyWe is involved in processing of metal parts (cutting, welding, electroplating, surface finishing etc.), printing the grading scales of measuring devices, making circuit boards, glasswares, wire coils, and lastly, packing of the final products together with the manuals. The part that amazed me the most in the production line is the making of glassware. The workers used high temperature flames to soften the glass and then they used additional tools and glass blowing methods to shape the glass according to the design. I think the workers have to be highly skilled in order to produce the appropriate glassware. Some of the glassware is quite complicated and producing them will require great skills and experience.



From top left to bottom right: Making prototype; Grading scales; Electroplating facility; Cutting metal parts; Shaping conical flasks; Glass blowing; Michelson interferometer setup

We went back to the conference room after touring the production line. The service department manager continued to demonstrate some experimental setups that they had newly designed. One of the setups he demonstrated can be used as Fabry-Perot interferometer and Michelson interferometer just by changing some of the optical components. I found the experimental setup quite cool as the optical components can be fixed on the table by magnets and it is quite easy for university students to perform the experiments. We left PhyWe for Göttingen city after we had lunch in their canteen.

After hours of walking around in Göttingen city, we headed back to Mariaspring for a barbeque dinner. They had prepared sausages and patties for us and we sat there waiting to be served. Some of us played Frisbee while the chef was barbequing, so that we could eat more food later. The food prepared was sumptuous and everybody ate their fill despite the blowing chilling wind. After the dinner, everybody went kegling, playing table tennis, table soccer and dart throwing. We also played win, lose or draw after the series of games. We had loads of fun at night. After that, everybody went back to their rooms and started packing for the trip back to Singapore.



From top left to bottom right: Frisbee flying towards me; Guo Chuan catching frisbee; Food prepared during farewell dinner; Yoke Leng kegling, Playing foosball; Guo Chuan throwing dart; Zhanjiang and Wen Di playing table tennis; Pictionary game; Can you name the thing drawn?



Farewell (BBQ) dinner at Mariaspring

Thinking back to what I had gone through in the past 20 days on the train back to Munich from Göttingen, I concluded that it was a fun and great learning experience. I must really thank Prof. Englert and Prof. Thomas for organizing the trip and giving me the chance to go for this trip. The visit to physics faculties of universities in Germany (LMU, TUM, GAU) are really enriching and I may consider doing graduate studies in one of the universities here. Perhaps I will make another trip to Germany, to visit this beautiful country with rich history, in the future.



Group photo at Munich Airport before departure

Acknowledgements

This diary will not be compiled smoothly without the help of the following people.

- GIT'10 participants for contributing their diaries and photos
- Yarong for checking the grammar mistakes and layout
- Peishan for helping in the design of cover page

Chang Sheh Lit
Editor