

1. Organisational Details (15 points)

To be discussed on Friday, 23rd February, 2024 in the tutorial.

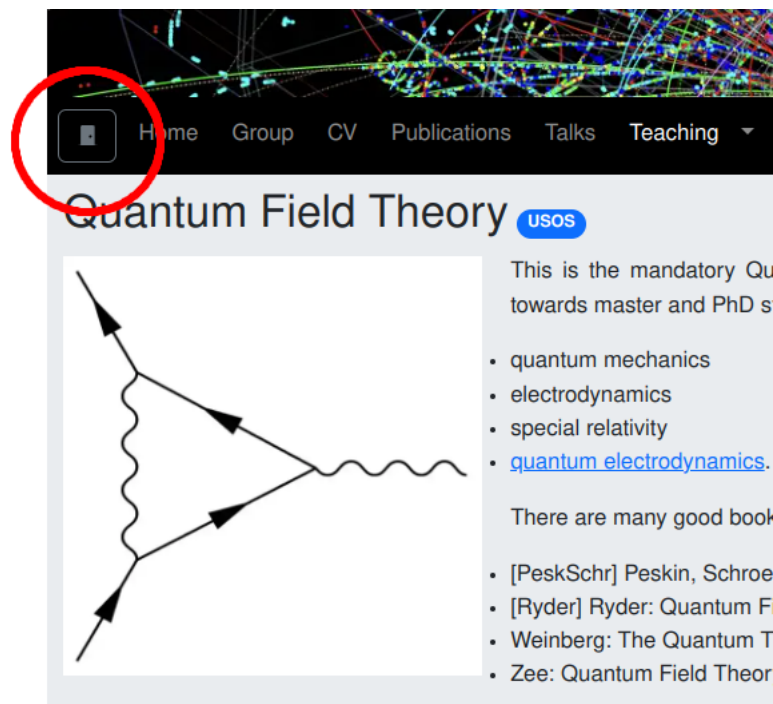
Please indicate your preferences until Sunday, 18/02/2024, 21:00:00 on the website.

For you to take the most out of the tutorials, we first have to settle some organisational details. Most important is that you keep in mind that solving the exercise problems is an essential component in learning quantum field theory and thereby successfully finishing the course. On the other hand, I understand that you are very busy and may not have always time to solve all the problems before the tutorial. Therefore, we will assign exercise problems before the tutorial to help everybody.

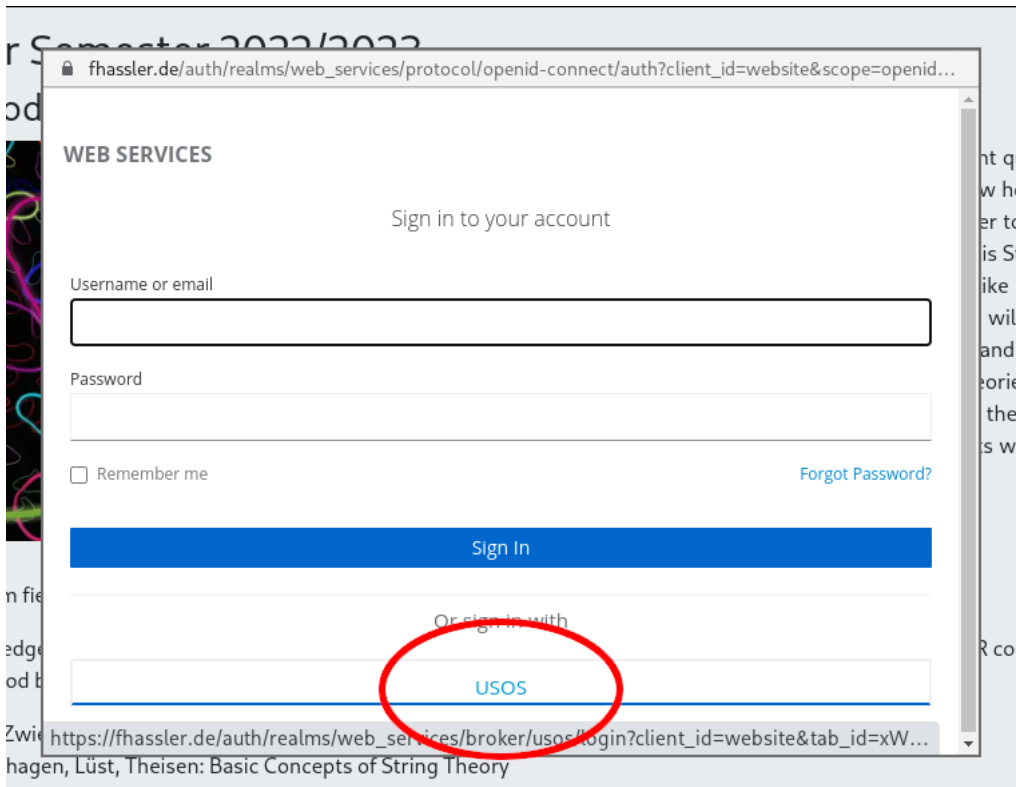
For this to work, you first have to register on the course's website

https://www.fhassler.de/teaching/ss_24/qft

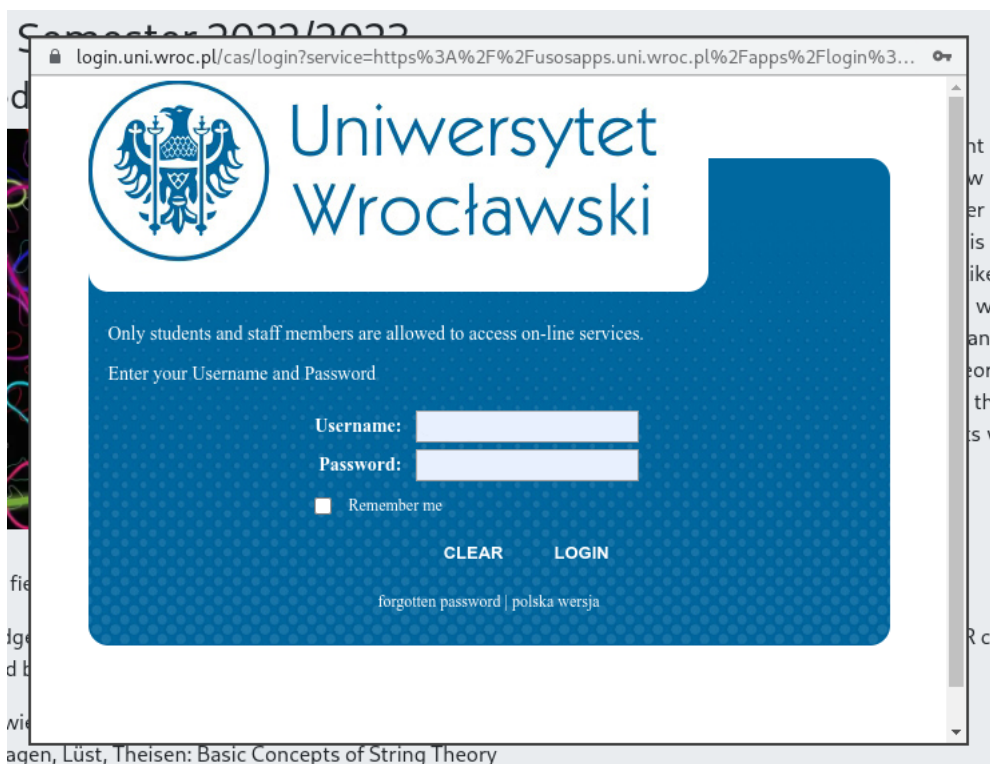
Once you are there, click on the small door in the top left corner.



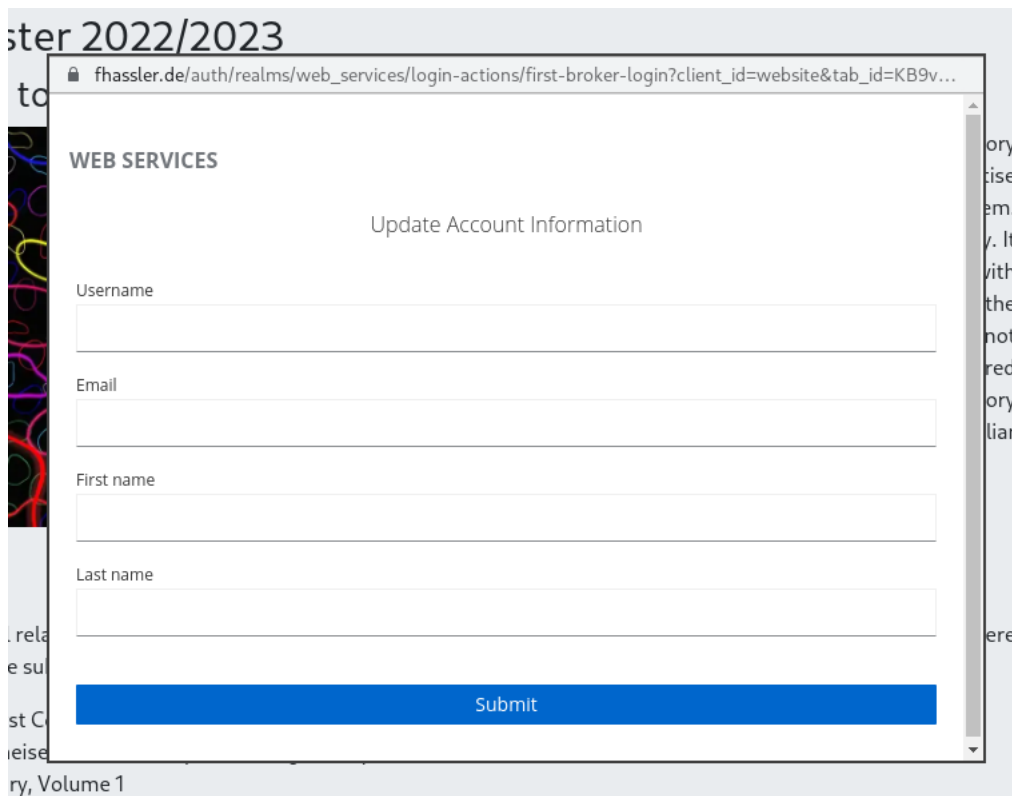
After doing so, a new window will pop up in which you should select login with USOS.



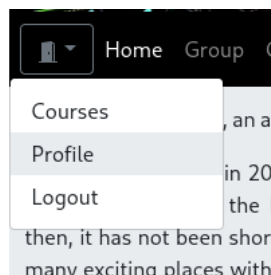
Clicking this button redirects you to the USOS login website of the university. There, you should login with your credentials, i.e. the username is the first part of your email address which comes before the @uwr.edu.pl.



After a successful login, you are asked to choose a username, provide your email address and indicate your first/last name. Most important here is that you use an email address which you check regularly, because all announcements about the course will be sent to this address.



After this is done, the small door in the top right corner which was initially closed opens up. By clicking it, you will find the following options:



Under Profile, you can edit your data, while Courses gives you a summary of the points you already have earned for solving exercise problems.

Talking about problems and assignments; Every week after the lecture, a new problem sheet is published on the website. If you followed the above steps, you will get an email when it appears. After logging in, a new link called manage should appear behind each exercise.

Additional material for the individual lectures, including the exercises which we discuss in the tutorials, will appear here in

- 1 Why, what and how - from the relativistic particle to the Nambu-Goto action, 06.10.2022, [exercise](#), [manage](#)
Please note that there are no exercise assignments for the first tutorial. However, we will use a few minutes to exercise problems are assigned. To prepare, it would be great if you could already follow the instructions outlined i find under the exercise link above. For the remainder of the tutorial, we continue with the lecture. This gives us tim why we need string theory, to look at the relativistic point particle and to show how it can be generalised to the strin
- 2 Classical string and the Polyakov action, 13.10.2022

By clicking it, you see a list of all problems for this exercise. It also includes the number of points you can get for each task. Problems that are marked with an asterisk (*) are optional and will not be automatically assigned. However, you can solve them to get additional points.

You can drag all problems in this list into a new order to indicate your preference (your favorite problems go to the top). After doing so, you have to save to changes by clicking the Save button. Please do not forget this step because otherwise your changes are not applied.

1 Why, what and how - from the relativistic particle to the Nambu-Goto action, 06.10.2022, [exercise](#), [manage](#)
Stage 1: Select Your favorite problems. They should be first on this list. You can drag and drop them into the order you prefer. Please don't forget to use the Save button after you are done. Moreover, you can report absent for this problem.

Hereby, I notify the lecturer that I am absent. No problems will be assigned to me.

2.d)* Second Problem (6 points)

2.c) Second Problem (5 points)

2.b) Second Problem (4 points)

2.a) Second Problem (3 points)

1.b) First Problem (2 points)

1.a) First Problem (1 points)

Save

Please note that there are no exercise assignments for the first tutorial. However, we will use a few mi

Alternatively, you can indicate that you are absent for this exercise. **But note, that you can only be absent for two exercises.** Hence, use this option wisely. If you choose it, no problems will be assigned to you this time.

This brings us to the assignment of problems. After you indicated your preferences as described above, at

Sunday 21:00,

all problems will be assigned. The assignment happens completely automatically according to the following rules:

1. At the end everybody should have approximately the same number of total, achievable points. Therefore, you can either have simpler problems with less points or a few hard ones which contribute with more points.
2. If you do not indicate any preferences you get what nobody else wanted.
3. If two students have the same preferences, the one who indicated them first wins.

Concluding, its in your best interest to indicate your preferences in time. After the deadline, you will receive an email with the assignment for the next tutorial. Each problem comes with two names. The first student has to present the problem in class and the second acts as a backup. The backup has to take over when the primary candidate is not able to present the solution. If the backup is doing well, s/he can get 50% of the original points of the problems as extra points. However, failure of presenting anything might also result in a 50% penalty.

Therefore, if you know that for any reason you cannot present your assigned problems, please inform your backup such that they are not surprised.
In addition to the assignment email, you can also find the assignments on the website.

Stage 2/2: The assignments for this exercise are complete. You have to present all problems that are marked red and you are the backup candidate for the once in yellow.

Hereby, I notify the lecturer that I am absent. No problems will be assigned to me.

1.a) First Problem (1 points)
Dasy Duck [upload solution](#), Dagobert Duck

1.b) First Problem (2 points)
Donald Duck, Dagobert Duck

2.a) Second Problem (3 points)
Dagobert Duck, Dasy Duck [upload solution](#)

2.b) Second Problem (4 points)
Dasy Duck [upload solution](#), Dagobert Duck

2.c) Second Problem (5 points)
Donald Duck, Dasy Duck [upload solution](#)

2.d)* Second Problem (6 points)

The problems marked in **red** are the ones you have to present, and the ones in **yellow** are those for which you are the backup. By clicking on **upload solution**, you can upload a pdf file of your solution (this can be a photo/scan of your sheet of paper). After uploading, the problems should turn **green**. Don't worry, you can still modify your solution afterwards by clicking on **update solution**.

1.a) First Problem (1 points)
Dasy Duck solution [sol_intro.pdf](#) (570069 bytes) [update solution](#), Dagobert Duck

1.b) First Problem (2 points)
Donald Duck, Dagobert Duck

2.a) Second Problem (3 points)
Dagobert Duck, Dasy Duck solution [sol_ex1.pdf](#) (96648 bytes) [update solution](#)

2.b) Second Problem (4 points)
Dasy Duck [upload solution](#), Dagobert Duck

2.c) Second Problem (5 points)
Donald Duck, Dasy Duck [upload solution](#)

2.d)* Second Problem (6 points)

After the exercise, you will also see all points which have been assigned to you here. Please make sure that you follow all instructions above and let me know if you encounter any problems.

Exercise 1.1: First Problem

- a) (1 point) 1st question
- b) (2 points) 2nd question

Exercise 1.2: Second Problem

- a) (3 points) 1st question
- b) (4 points) 2nd question
- c) (5 points) 3rd question
- d) (6 bonus points) 4th question: This is a bonus question.