SWE Challenge

So the challenge will be for you to work with the fundamental underlying data of QD. The data is shown in the attached paper in Figure 1.(d) [1]. I also included a `.py` file which visualizes a similar spectrum as well and makes it easy to get started.

The goal here is to extract 3 values: The peak differences between peak cluster 1 & 6, peak cluster 2 & 5, peak cluster 3 & 4.

- These peak clusters are composed of **3 peaks** each and can be mapped using a **triple lorentzian distribution**. What we are interested in is the center of a triple which is the average of the 3.
- For reference: Peak cluster means a single graph that is shown within a dashed black frame in Figure 1.(d) [1].
- For reference: There are two measurements in the directory, the one is a reference measurement with no external magnetic field applied, for the other one there was a 45 mA current applied in the object that was measured which creates an external magnetic field. Both are relevant to the overall results.

These 3 peak deltas allow us to **calculate the magnetic field strengths in (x,y,z)** direction.

The meta of the challenge is to get a feel how you would approach such a task, how you structure the procedure and how you present it.

- Additionally, there are two papers attached which will explain our technology from a scientific perspective and gives useful background knowledge.
- You can take your time for the challenge. After handing in your results, we will then schedule a short review and Q&A session afterwards. If anything is unclear, please do not hesitate to send me an email.

[1] Vector Magnetic Current Imaging of an 8 nm Process Node Chip and 3D Current
Distributions Using the Quantum Diamond Microscope