Week 9: 1/12/2021 – Wednesday

1. **Outline of Meeting**

This meeting was held on Zoom. It was dedicated to outline how we are going to move forward with noise analysis. Going back to the previous weeks, we can now use the dF0 formula and data measurements to do readings on noise. This can be accomplished by taking measurements of a known temperature object (e.g. a heated bar) and scanning across to measure the room (background). This gives us information on the responsivity and hence the NEP.

2. **Specification of Tasks**

a) Noise Spectral Density:

i) 1. Load code and understand how to produce a power spectrum and noise spectral density in Python

ii) 2. Use the Syntax to make similar spectral density plots for real KID data (need to convert real (I) and Imaginary (Q) data to a df time stream using sweep data)

iii) 3. Measure response of KID data for each KID. dI/dF + dQ/dF

b) Interim Report

i) Produce a skeleton and slides as a plan for the report.
Advised to prioritise this over the Noise spectral Density Task

3. **Outline and Methodology**

Building on the previous week's work. We are now able to measure the response of the KID using the data from last week. We do this by first finding the dI/dF0 and dQ/dF0 using the sweep data by obtaining the numerical derivative at the minimum point. Then, using each point on the timestream data as I(t) and Q(t), plug these values along with the dI/dF0 and dQ/dF0 to obtain an dF0. Subtract dF0 from the tone frequency and plot for varying times.

Prioritize Interim Report Planning. This can be accomplished after Interim Report submitted