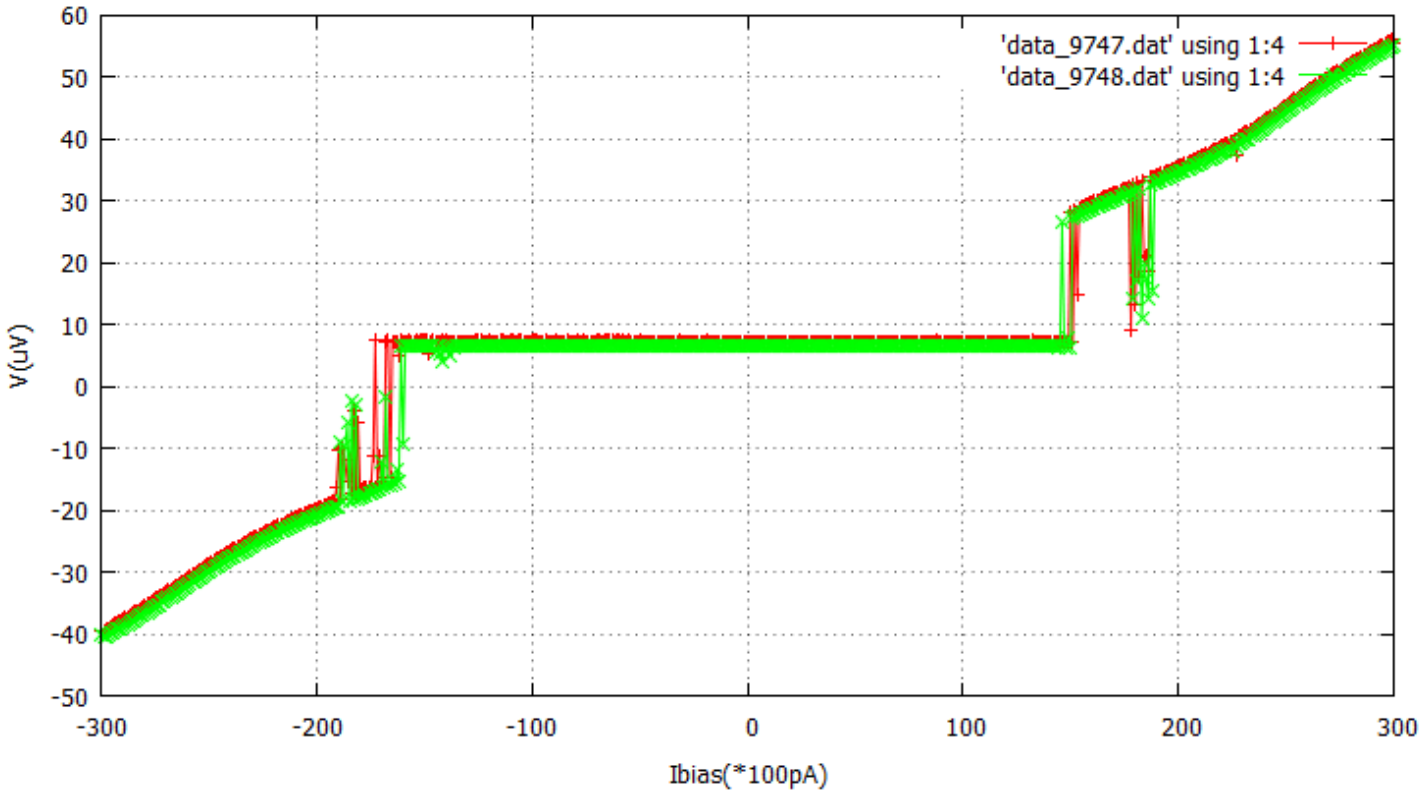
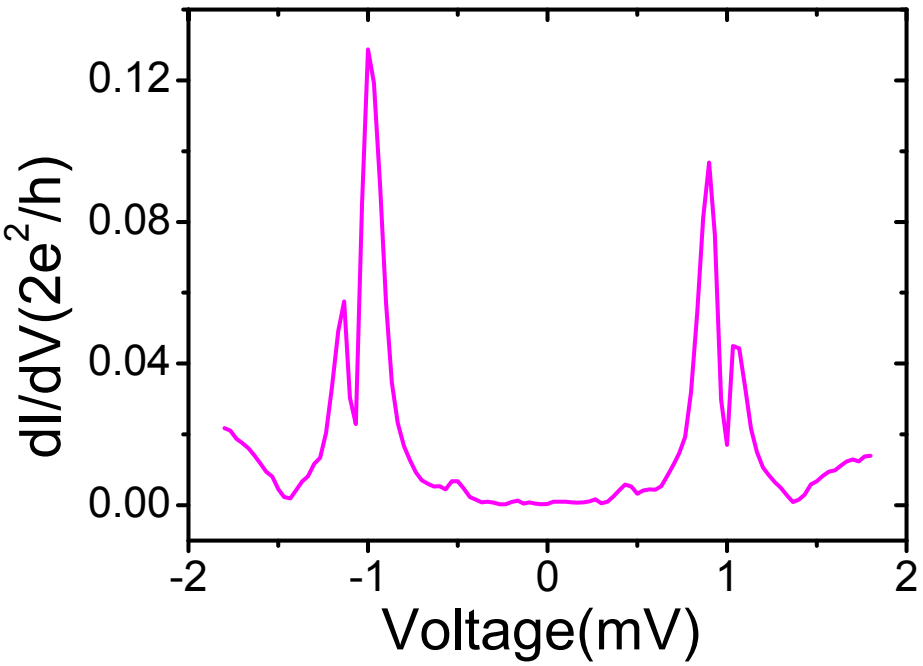
Frolov/Boulder – Homework #1

Data below show raw current-voltage measurements on a NbTiN-InSb-NbTiN Josephson junction. The top graph is in the open regime and shows supercurrent. The bottom graph is with the nanowire depleted and it measured the induced gap. Use the data and the BTK theory (http://www.physics.wayne.edu/~nadgorny/Docs/BTK.pdf) to estimate this junction's transparency (barrier strength).





Frolov/Boulder – Homework #2

- Create an account at cloud.sagemath.com and create a new project

- Go to http://tiny.cc/majorana_conductance and copy all the files to the project you just created

(Note: in order to copy a folder needs to be specified, in my case it generated automatically)

Open the file called "majorana_conductance" and select "cell -> run all" from the menu.

This will show the conductance of an infinite Majorana wire in both trivial and topological regimes as well as its spectrum. Be patient.

Study the text and the graphs.

Vary the code to dee what happens when the field parallel to the spin-orbit field is introduced.