

Tunneling spectroscopy data from QDev439 nanowires

In the shared folder we present all the tunneling spectroscopy experiments performed with QDev439 nanowires from January 2019 to November 2019 which lead to the paper “**Non-topological zero bias peaks in full-shell nanowires induced by flux tunable Andreev states**”. All measurements have been performed by Marco Valentini.

Tunneling spectroscopy data from QDev439 nanowires

Name of the device(s)	Description
Majo2_alldevices	Preliminary Tunneling spectroscopy measurements on QDev439. No B-field measurements.
Majo15_Device1	Long-junction device not reported in the paper.
Majo15_Device2	Device with unknown junction length and not understood behavior. No presence of ZBP.
Majo15_Device4	Device with a soft gap.
Majo15_Device5	Device which did not show Little-Parks effect.
Majo15_Device7	Device not measured in detail. No B-field measurements.
Majo15_Device8	Device not measured in detail. No B-field measurements.
Majo15_Device10	Device not measured in detail. No B-field measurements.
Majo15_Device13	Device with unknown junction length and not understood behavior. No presence of ZBP.
Majo15_DeviceC	Data of Device C.
Majo20_DeviceE	Data of Device E.
Majo20_otherdevices	Rough tunneling spectroscopy measurements of other devices. No B-field measurements.
Majo24_alldevices	tunneling spectroscopy with different junction lengths which allowed to understand the optimal condition for ruling out the presence of Yu-Shiba-Rusinov states. (The junction length is indicated in the file names for each device).
Majo30_DeviceA	Data of Device A.
Majo30_DeviceF	Data of Device F.
Majo30_DeviceG	Data of Device G.
Majo30_DeviceH	Data of Device H.
Majo30_DeviceI	Data of Device I.
Majo30_DeviceJ	Data of Device J.
Majo30_DeviceK	Data of Device K.
Majo30_DeviceL	Data of Device L.
Majo30_DeviceM	Data of Device M.
Majo30_otherdevices	Devices with not understood behavior (no relation with zero bias peak).
ABS1_DeviceB	Data of Device B.
ABS1_otherdevices	Additional long-junction tunneling spectroscopy devices.
ABS1_secondcooldown_DeviceD	Data of Device D.
ABS2	Additional long-junction tunneling spectroscopy devices.
ABS2_secondcooldown	Additional long-junction tunneling spectroscopy devices.

Where to find the data presented in the paper (main text)

Figure number	Folder	Name of the file
1C	Majo30_DeviceA	dev15_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_varyingbgINT_BGextopen_B0mT_theta94_100M_lowRi
1D/1E/1F	Majo30_DeviceA	dev15_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_bgINT-19,5V_BGextopen_varyingB_theta94_100M_lowRi
2C/2D	ABS1_DeviceB	dev9_LOCKIN_allrange_0mT
3A	ABS1_DeviceB	dev9_LOCKIN_VG_firstrange_zero_first_second
3B	ABS1_DeviceB	dev9_LOCKIN_VG_firstrange_zero_first_second
3D	ABS1_DeviceB	dev9_LOCKIN_VG_firstrange_sweepingB_BG2_62
4A	ABS1_DeviceB	dev9_LOCKIN_B0mT_2ndRange
4B	ABS1_DeviceB	dev9_LOCKIN_100m_lowrin_300ms_exc10uV_waitingtime1s_freq10Hz_sens50mVpernA_filter6dB_B115mT_0mT_2ndRange
4D	ABS1_DeviceB	dev9_LOCKIN_VG1_84_sweepingB
4E	ABS1_DeviceB	dev9_LOCKIN_firstrange_Bsweep_singlet_biggerscan
5A/5D	Majo15_DeviceC	majo15_dev6_LOCK_IN_10M_sens20mVpernA_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms_varyingB_SideGate-1,84V
5B/5E	ABS1_secondcooldown_DeviceD	dev5_locking_othervalues2_sweepingB
5C/5F	Majo20_DeviceE	majo20_LockIn_dev11_BG-1,89V_varyingB_10M_lownoise__sens200uVperpA_waitingtime1s_freq_17,7HZ_timecostant_300ms_Vexc10uV
6A	Majo15_DeviceC	majo15_dev6_LOCK_IN_10M_sens20mVpernA_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms_0mT_SideGate
6B/6C	Majo15_DeviceC	majo15_dev6_LOCK_IN_10M_sens20mVpernA_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms_varyingSideGate_110mT
6D	Majo20_DeviceE	majo20_LockIn_dev11_varyingBG_10M_lownoise__sens2mVpernA_waitingtime1s_freq_17,7HZ_timecostant_300ms_Vexc10uV
6E/6F	Majo20_DeviceE	majo20_LockIn_dev11_varyingBG_B123mT_10M_lownoise__sens200mVperpA_waitingtime1s_freq_17,7HZ_timecostant_300ms_Vexc10uV

Where to find the data presented in the paper (supplementary)

Figure number	Folder	Name of the file
S5		Same files as figure S6
S6A	Majo30_DeviceF	dev6_LOCKIN_exc10uV_filter6dB_time300ms_sens20mVpernA_waitingtime1_varyingbgINT_BGextopen_B0and107mT_theta178_100M_lowRi
S6B	Majo30_DeviceF	dev6_LOCKIN_exc10uV_filter6dB_time300ms_sens20mVpernA_waitingtime1_bgINT-12_BGextopen_varyingB_theta178_100M_lowRi
S6C	Majo30_DeviceG	dev1_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1,2s_varyingbgINT_BGextopen_B0mT_theta0_100M_lowRin
S6D	Majo30_DeviceG	dev1_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1,2s_bgINT-32V_BGextopen_sweepingB_theta0_100M_lowRin
S6E	Majo30_DeviceH	dev7_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_varyingbgINT_BGextopen_B0mT_theta3_100M_lowRi
S6F	Majo30_DeviceH	dev7_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_bgINT-12,3V_BGextopen_varyingB_theta3_100M_lowRi
S6G	Majo30_DeviceI	dev9_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_varyingbgINT_BGextopen_B0and180mT_theta97_100M_lowRin
S6H	Majo30_DeviceI	dev9_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_bgINT-7,5V_BGextopen_varyingB_theta97_100M_lowRin
S6I	Majo30_DeviceJ	dev4_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1,2_bgINT-19V_BGextopen_varyingB_theta32_100M_lowRin
S6J	Majo30_DeviceJ	dev4_LOCKIN_exc10uV_time300ms_sens5mVpernA_waitingtime1_bgINT-19V_BGextopen_varyingB_theta32_100M_lowRin
S6K	Majo30_DeviceK	dev13_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_varyingbgINT_BGextopen_B0mT_theta0_100M_lowRin
S6L	Majo30_DeviceK	dev13_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_bgINT15,5V_BGextopen_varyingB_theta169_100M_lowRin
S6M	Majo30_DeviceL	dev14_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_varyingbgINT_BGextopen_B0_106mT_theta4_100M_lowRin
S6N	Majo30_DeviceL	dev14_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_bgINT-6V_BGextopen_varyingB_theta4_100M_lowRin
S6O	Majo30_DeviceM	dev3_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1bgINT-30V_BGextopen_varyingB_theta0_100M_lowRin
S6P	Majo30_DeviceM	dev3_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1bgINT-30V_BGextopen_varyingB_theta0_100M_lowRin
S7		Same files as figure S6

Where to find the data presented in the paper (supplementary)

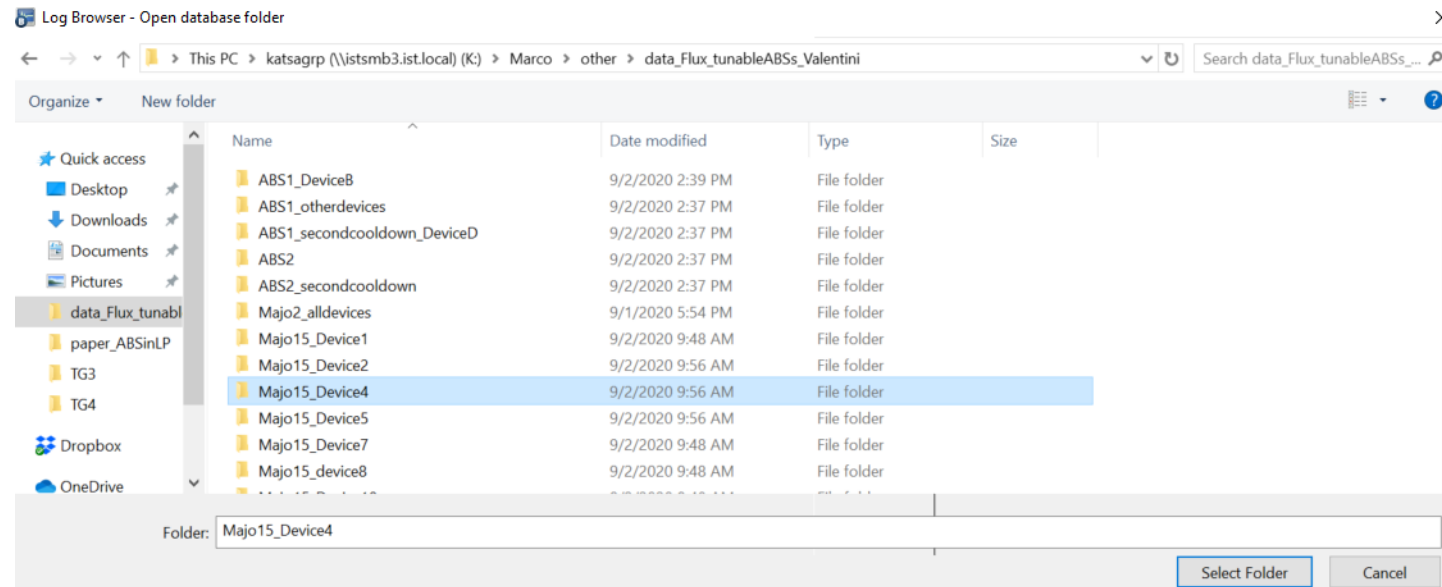
Figure number	Folder	Name of the file
S8A	Majo30_DeviceA	dev15_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_varyingbgINT_BGextopen_B0mT_theta94_100M_lowRi
S8B/S8C	Majo30_DeviceA	dev15_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpernA_waitingtime1_varyingbgINT_BGextopen_B116mT_theta94_100M_lowR
S9A/S9B/S9C	ABS1_DeviceB	dev9_LOCKIN_VG_firstrange_sweepingB_BG2_62
S9E	ABS1_DeviceB	dev9_LOCKIN_firstrange_BG2_62_T20mK_heater0 - dev9_LOCKIN_firstrange_BG2_62_T240mK_heater9 - dev9_LOCKIN_firstrange_2_62_T920mK_MC742mK_heater37 - dev9_LOCKIN_firstrange_2_62_T2817mK_MC1516mK_heater53_current33mA
S9F	ABS1_DeviceB	dev9_LOCKIN_all_Bperp_currentmeasurement_overall
S10A/S10B	ABS1_DeviceB	dev9_LOCKIN_firstrange2_62_seconddestructiveandlobe_toappend3_biffernt stp
S11A/S11B/S11C	ABS1_DeviceB	dev9_LOCKIN_VG1_84_sweepingB
S12A	ABS1_DeviceB	dev9_LOCKIN_firstrange_Bsweep_singlet_biggerscan
S13A	ABS1_secondcooldown_DeviceD	dev5_lockin_B0mT_sidegate_betterresolution
S13B/S13C	ABS1_secondcooldown_DeviceD	dev5_locking_firstlobe_sweepingBG
S14	Majo15_DeviceC	majo20_LockIn_dev11_BG-1,89V_varyingB_10M_lownoise__sens50uVperpA_waitingtime1s_freq_17,7HZ_timecostant_300ms_Vexc10uVZOOM1stlobe

How to open the data

- Download Labber (<http://labber.org/download/>).
- Open the Log Browser.

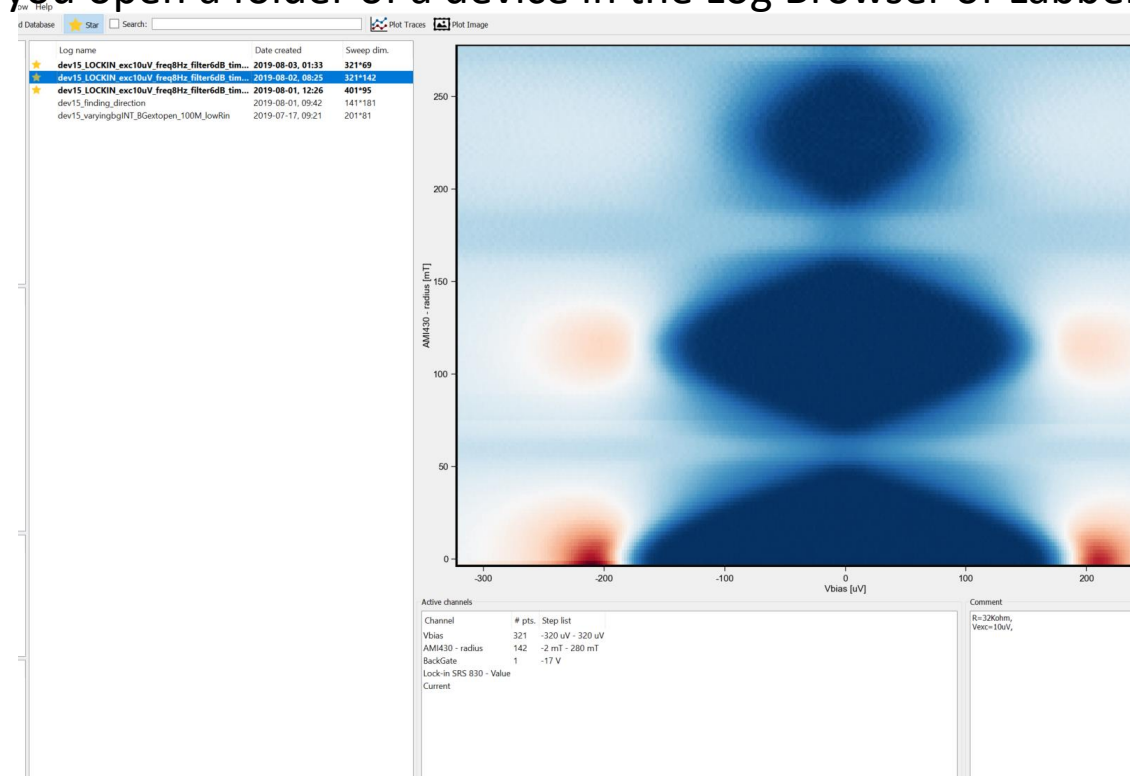


- Click on “Open Database”.
- Enter in the folder with the data.
- Select the device that you want to check and click “select folder”.



How to read the data

This is what you should see once you open a folder of a device in the Log Browser of Labber



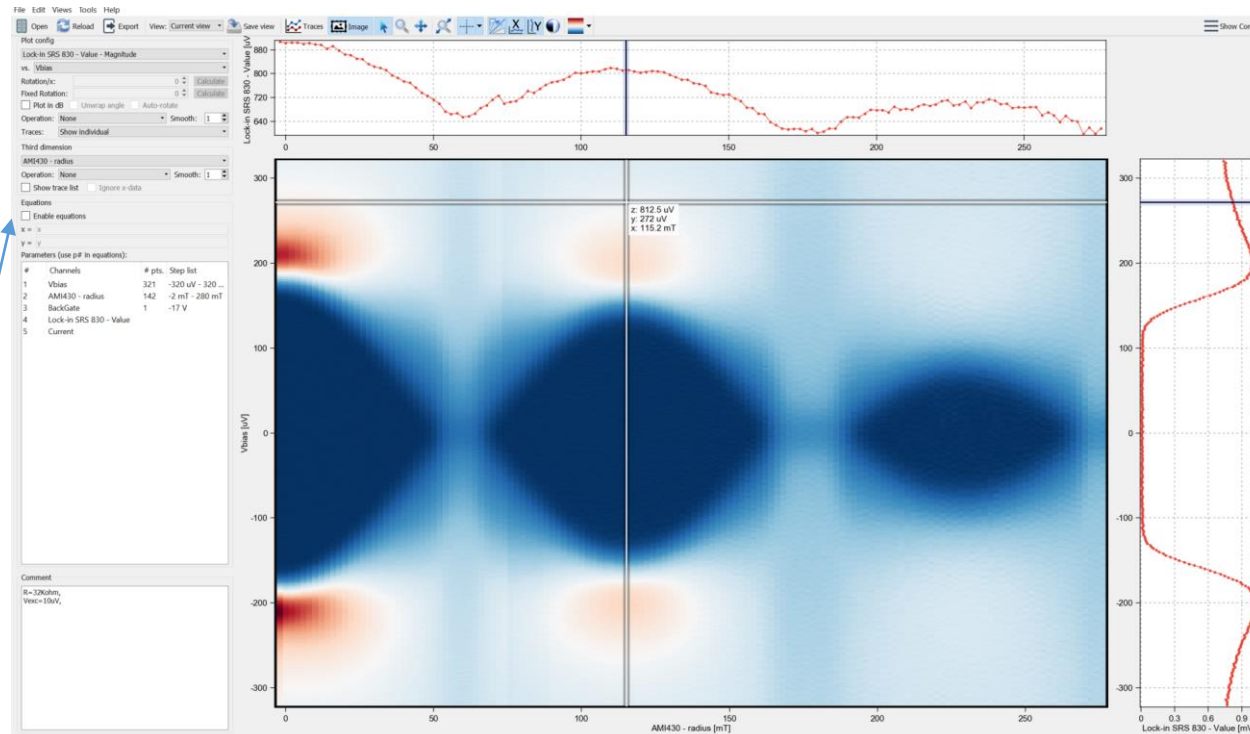
On the left there is the list of measurement (the relevant ones, according to me, have been starred). When you click on it, a preview of the measurement appear on the right.

At the bottom left, the parameters which have been swept or fixed during the measurement appear.

At the bottom right, the values of the total subtracted resistance and the Lock-in excitation are reported.

How to read the data – a closer look

If you double click on the measurement you have tools available to check the data in detail.



The cursor allows to check the traces.

The button “Enable operations” allows to correct the bias with the resistance provided in the comment section.

The button “Show Trace list” allows to see individual traces and to compare them.

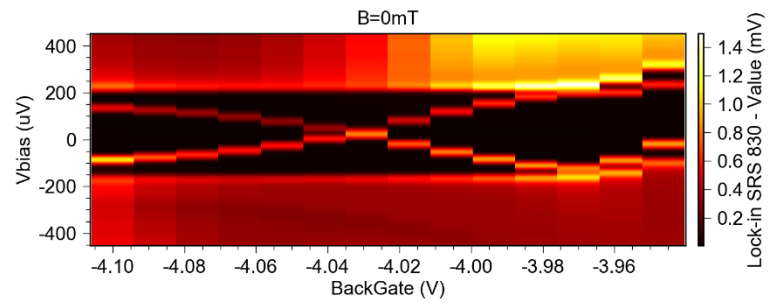
- “AMI 430 radius” indicates the amplitude of the magnetic field.
- The in plane angle is called theta.
- Lock-in SRS 830 are the Lock-in component measured. (The real component is what have been plotted in the paper, but its sign is inversed).

How to export the data

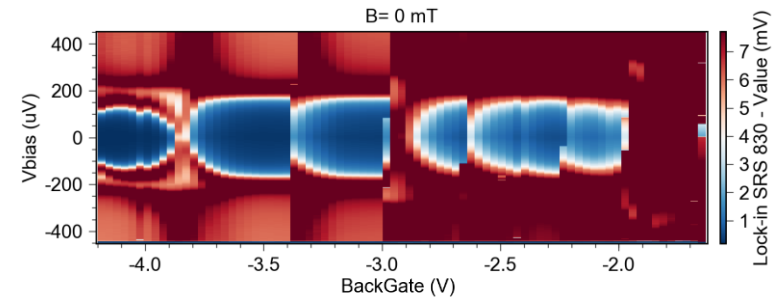
The data can also be exported in .txt files: go on “file” and select “Export to Text”.

Majo15

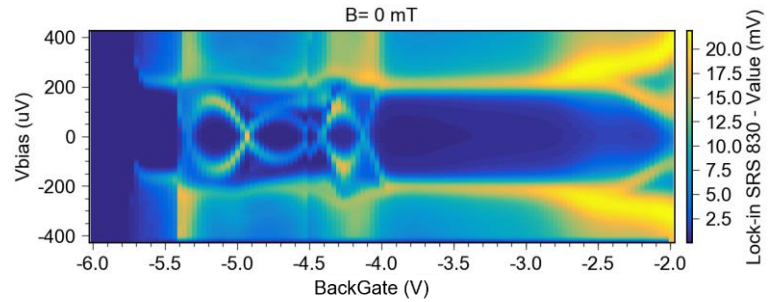
device 1



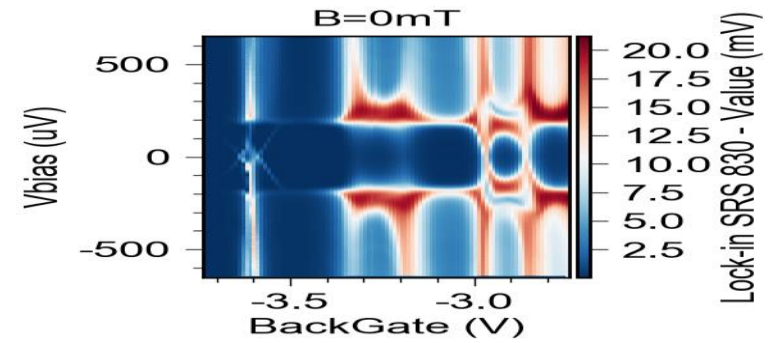
majo15_dev1_LOCK_IN_source46_drain1__backgate25_100M_sens5mV_low
Rin_waitingtime1s_freq_17,7HZ_timecostant_300ms_2



majo15_dev1_LOCK_IN_source46_drain1__sidegate48_100M_sens5mV_lowR
in_waitingtime1s_freq_17,7HZ_timecostant_300ms_3



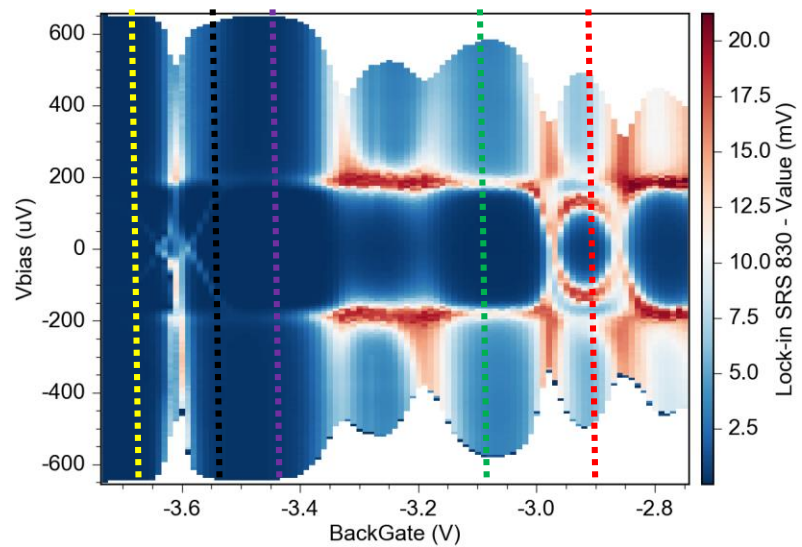
majo15_dev1_LOCK_IN_source46_drain1__sidegate48_100M_sens20mVpern
A_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms



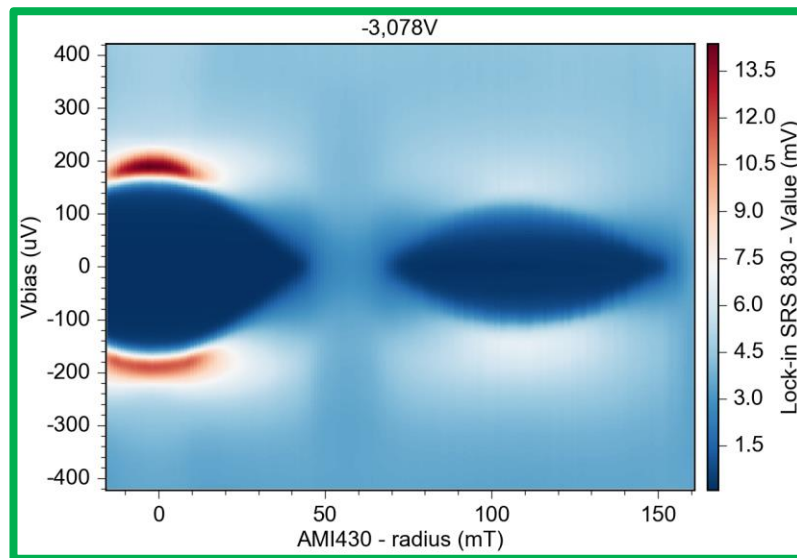
majo15_dev1_LOCK_IN_source46_drain1_100M_sens20mVpernA_lowRin_w
aitingtime1s_freq_17,7HZ_timecostant_300ms_varyingBackGate

Device was unstable

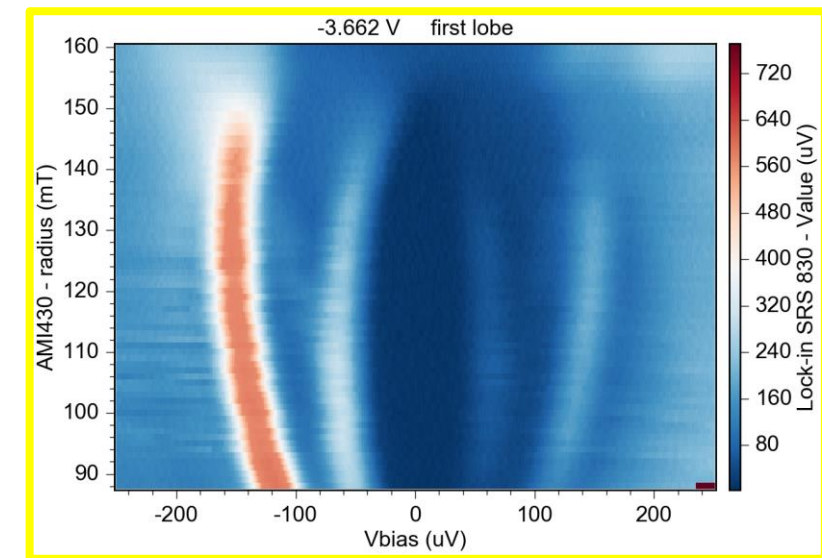
Device 1



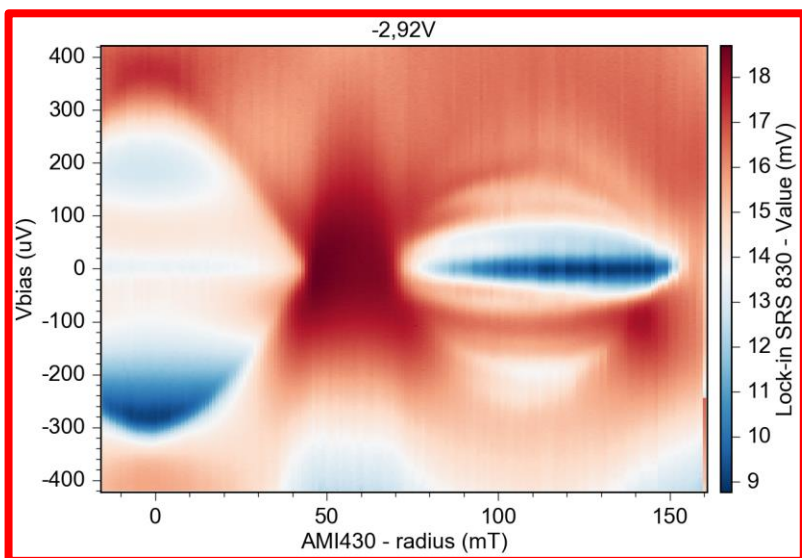
majo15_dev1_LOCK_IN_source46_drain1_100M_sens500uVperpA_lowRin_w aitingtime1s_freq_17,7HZ_timecostant_300ms_varyingBackGate_varyingB



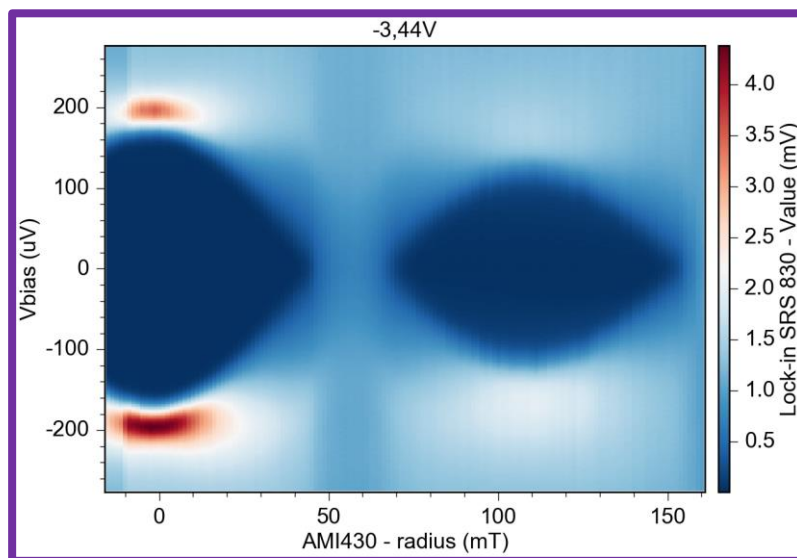
majo15_dev1_LOCK_IN_source46_drain1_100M_sens500uVperpA_lowRin_w aitingtime1s_freq_17,7HZ_timecostant_300ms_varyingBackGate_varyingB_s econdrange



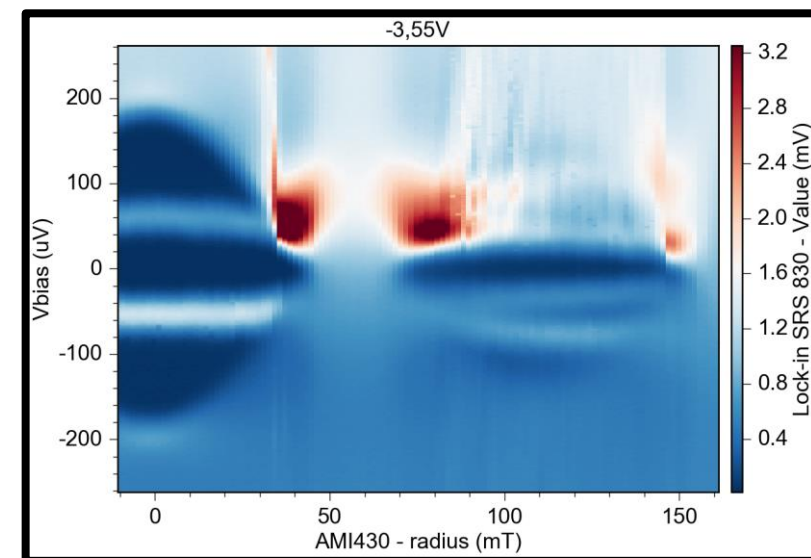
majo15_dev1_LOCK_IN_source46_drain1_100M_sens500uVperpA_lowRin_w aitingtime1s_freq_17,7HZ_timecostant_300ms_varyingBackGate_varyingB



majo15_dev1_LOCK_IN_source46_drain1_100M_sens500uVperpA_lowRin_w aitingtime1s_freq_17,7HZ_timecostant_300ms_varyingBackGate_varyingB_s econdrange

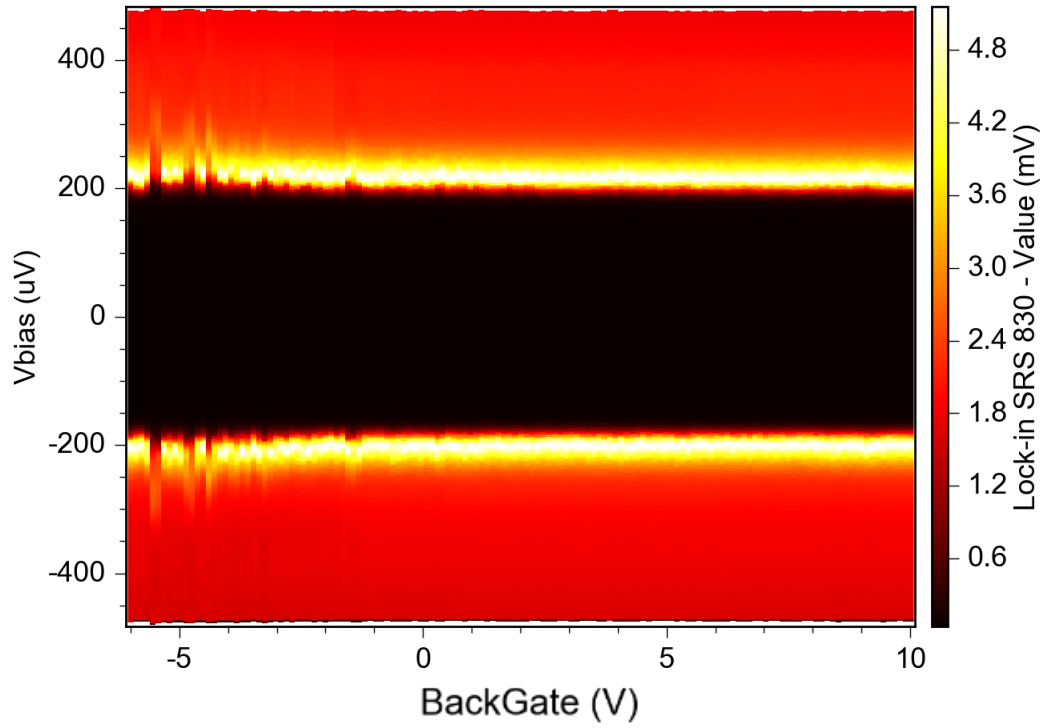


majo15_dev1_LOCK_IN_source46_drain1_100M_sens20mVpernA_lowRin_w aitingtime1s_freq_17,7HZ_timecostant_300ms_varyingBackGate_varyingB_fi rstrange

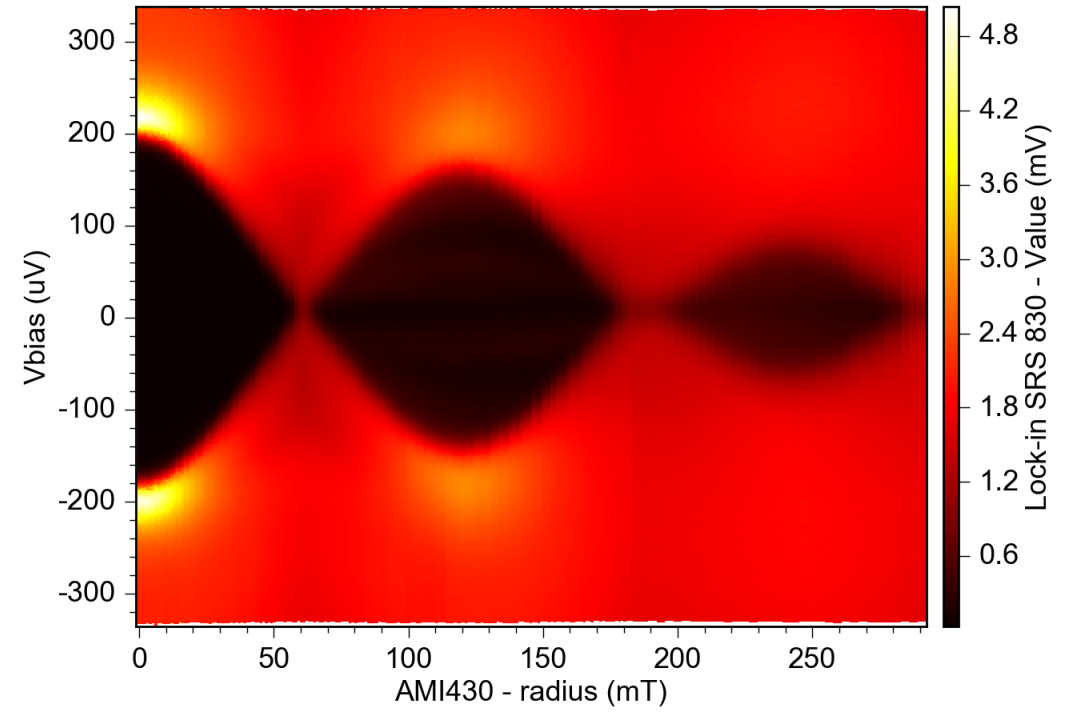


majo15_dev1_LOCK_IN_source46_drain1_100M_sens20mVpernA_lowRin_w aitingtime1s_freq_17,7HZ_timecostant_300ms_varyingBackGate_varyingB _BG-3,59

Device 2

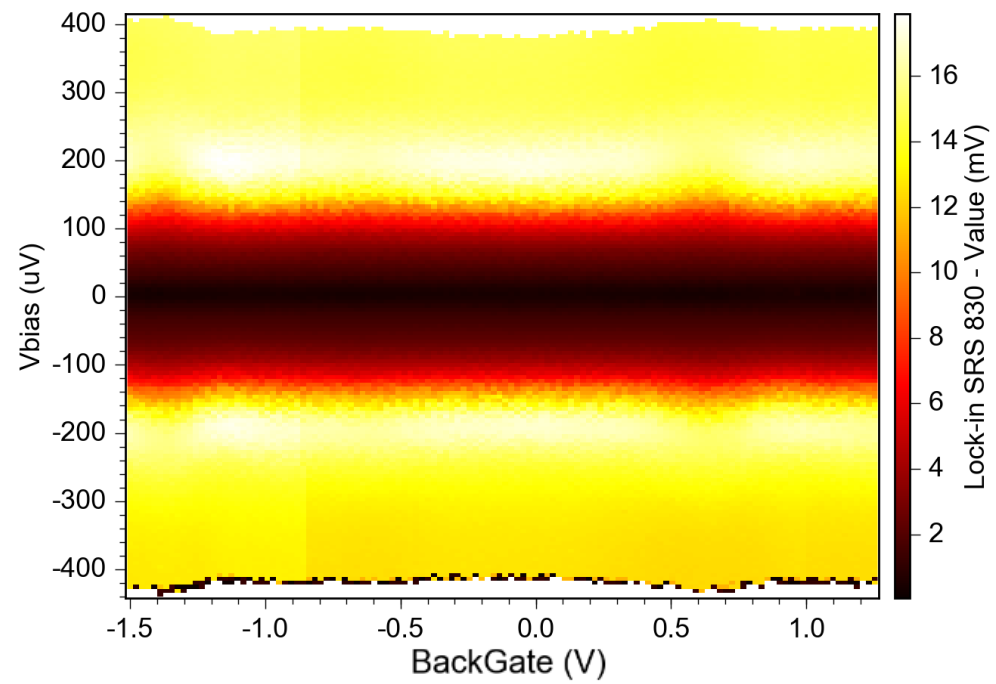


majo15_dev2_LOCK_IN_source5_drain4__sidegate3_100M_sens5mV_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms

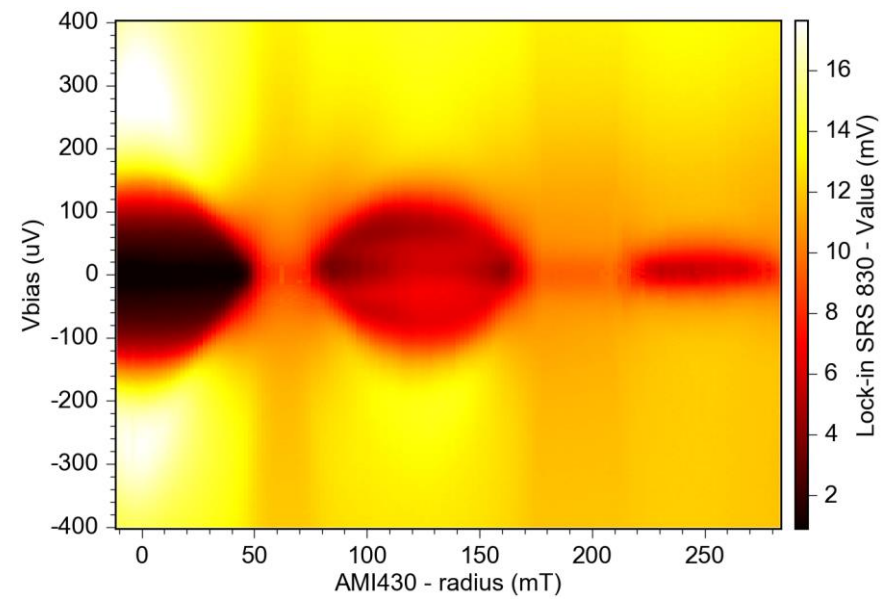


majo15_dev2_LOCK_IN_source5_drain4__sidegate0mV_100M_sens5mV_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms_phi139_varyingB

Device 4 (soft gap)

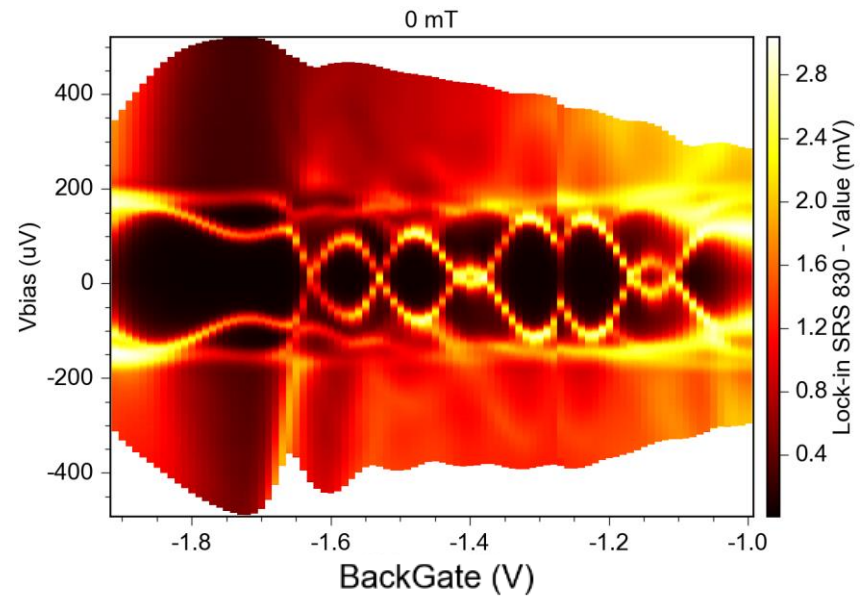


majo15_dev4_LOCK_IN_source8_drain9_100M_sens20mVpernA_lowRin_waiti
ngtime1s_freq_17,7HZ_timecostant_300ms

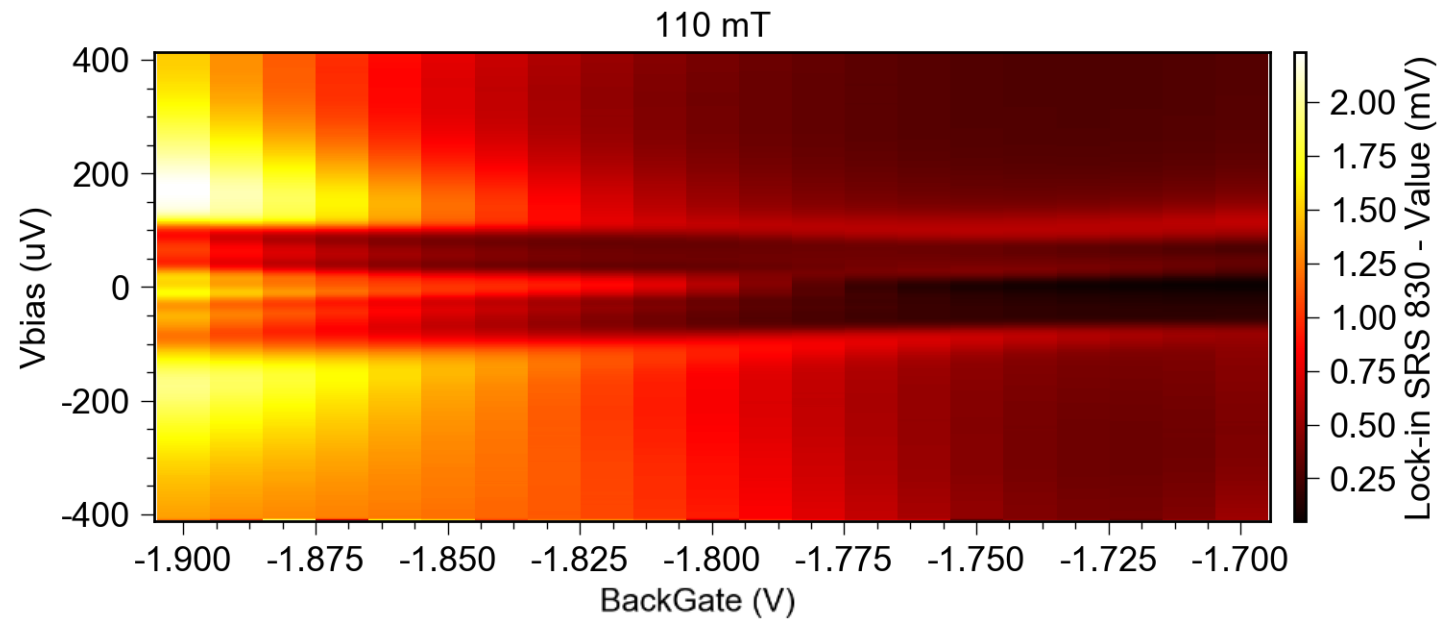


majo15_dev4_LOCK_IN_source8_drain9_100M_sens20mVpernA_lowRin_waiti
ngtime1s_freq_17,7HZ_timecostant_300ms

Device C



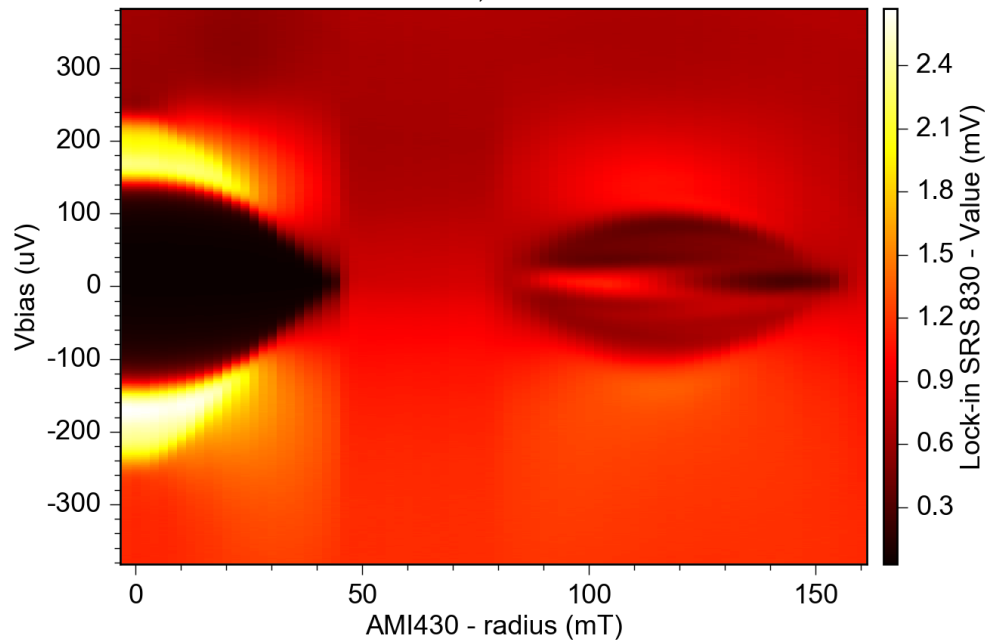
majo15_dev6_LOCK_IN_10M_sens20mVpernA_lowRin_waitingtime1s_freq_17,
7HZ_timecostant_300ms_0mT_SideGate



majo15_dev6_LOCK_IN_10M_sens20mVpernA_lowRin_waitingtime1s_freq_17,
7HZ_timecostant_300ms_varyingSideGate_110mT

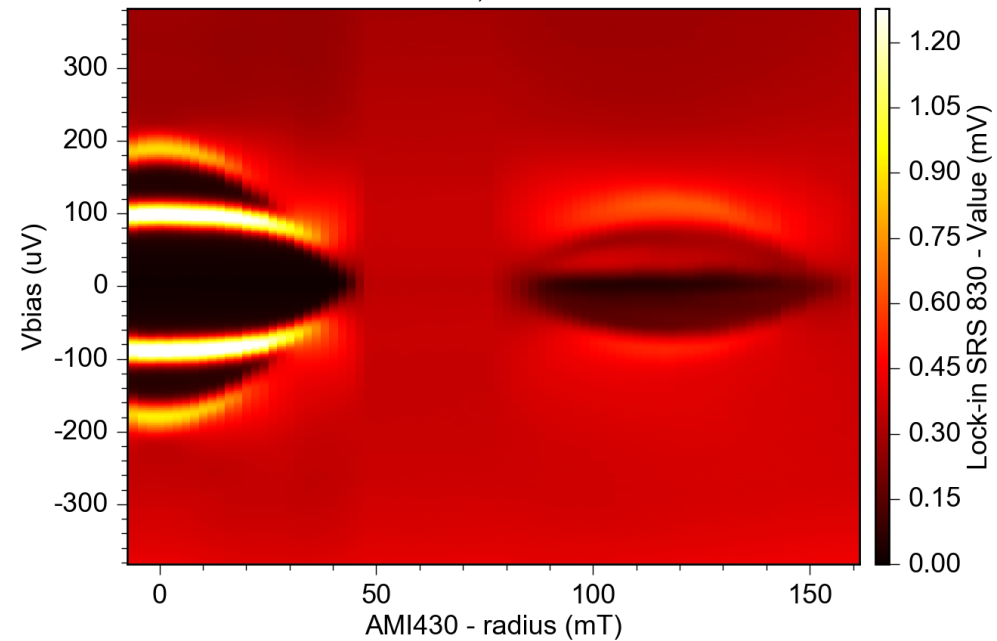
Device C

-1,84V



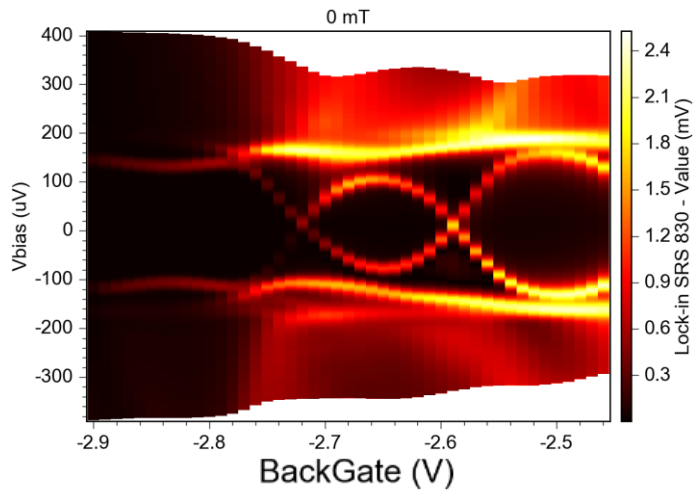
majo15_dev6_LOCK_IN_10M_sens20mVpernA_lowRin_waitingtime1s_freq_17,
7HZ_timecostant_300ms_varyingB_SideGate-1,71V

-1,71V

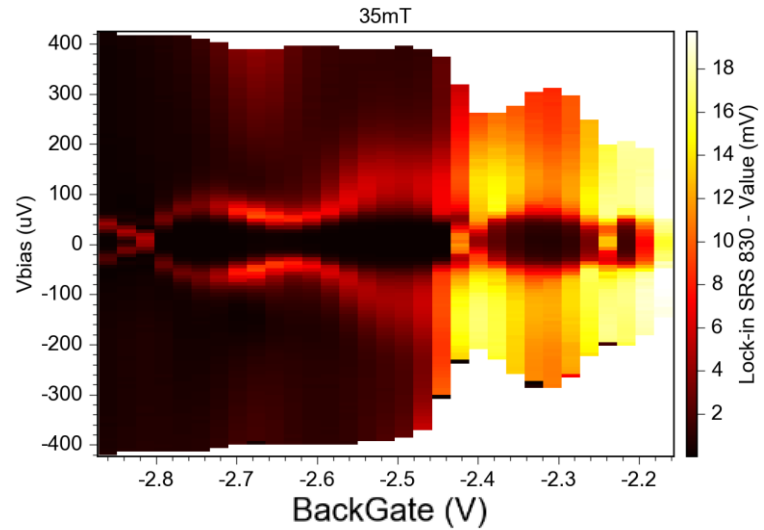


majo15_dev6_LOCK_IN_10M_sens20mVpernA_lowRin_waitingtime1s_freq_17,
7HZ_timecostant_300ms_varyingB_SideGate-1,71V

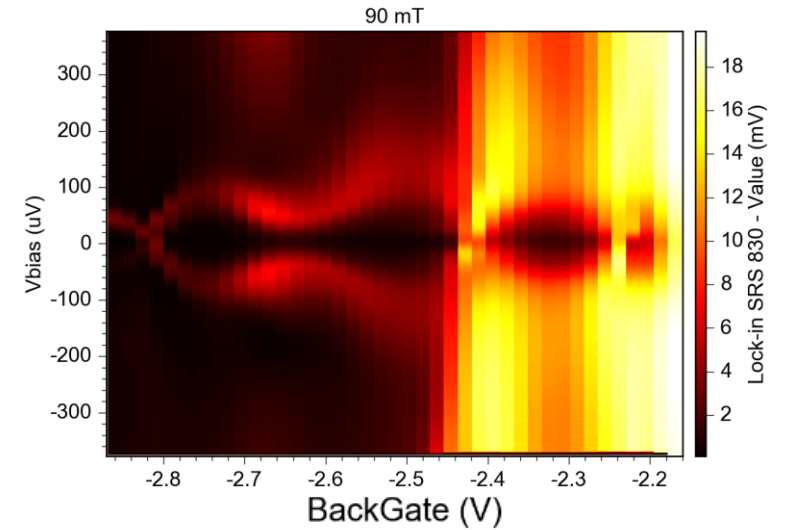
Device C, in another voltage range



majo15_dev6_LOCK_IN_10M_sens20mVpernA_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms_0mT_SideGate

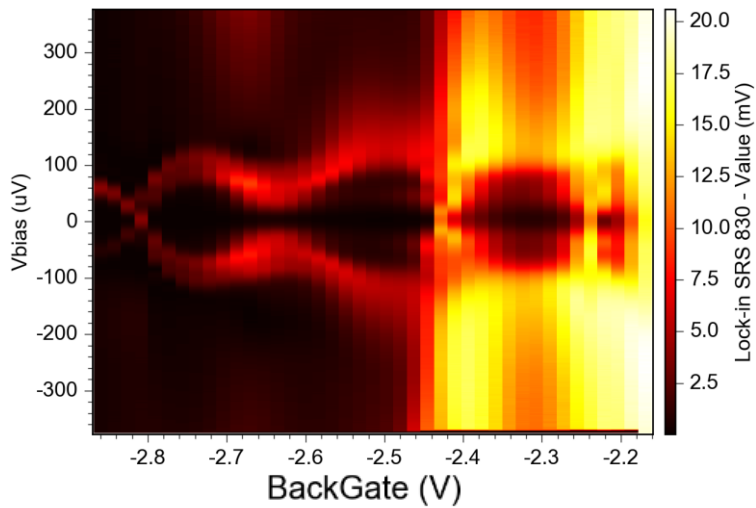


majo15_dev6_LOCK_IN_source17_drain15_100M_sens20mVpernA_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms_B35mT_varying_sidegate



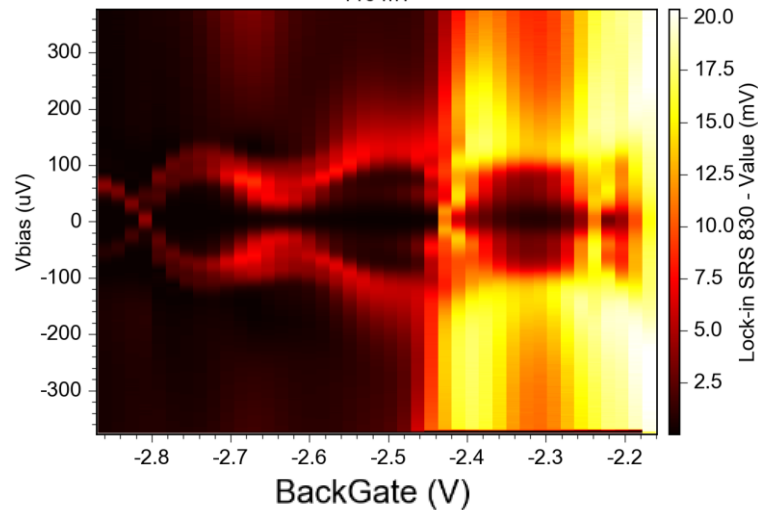
majo15_dev6_LOCK_IN_source17_drain15_100M_sens20mVpernA_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms_varyingB_varying_sidegate

103 mT



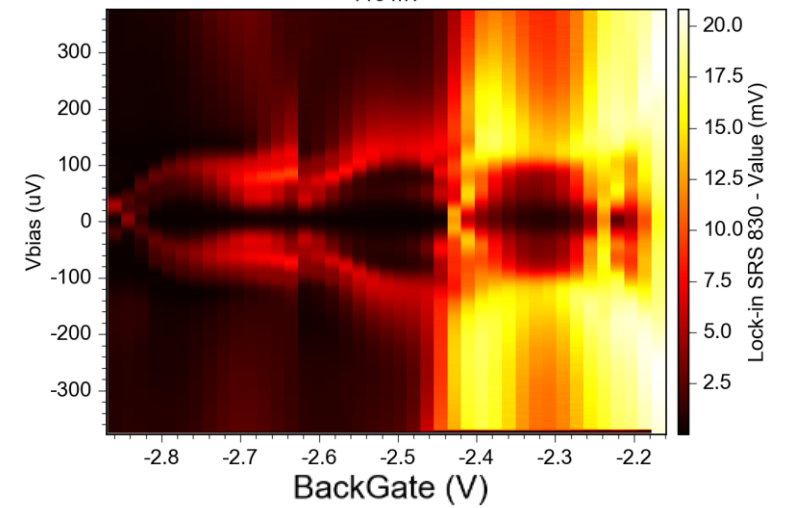
majo15_dev6_LOCK_IN_source17_drain15_100M_sens20mVpernA_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms_varyingB_varying_sidegate

110 mT



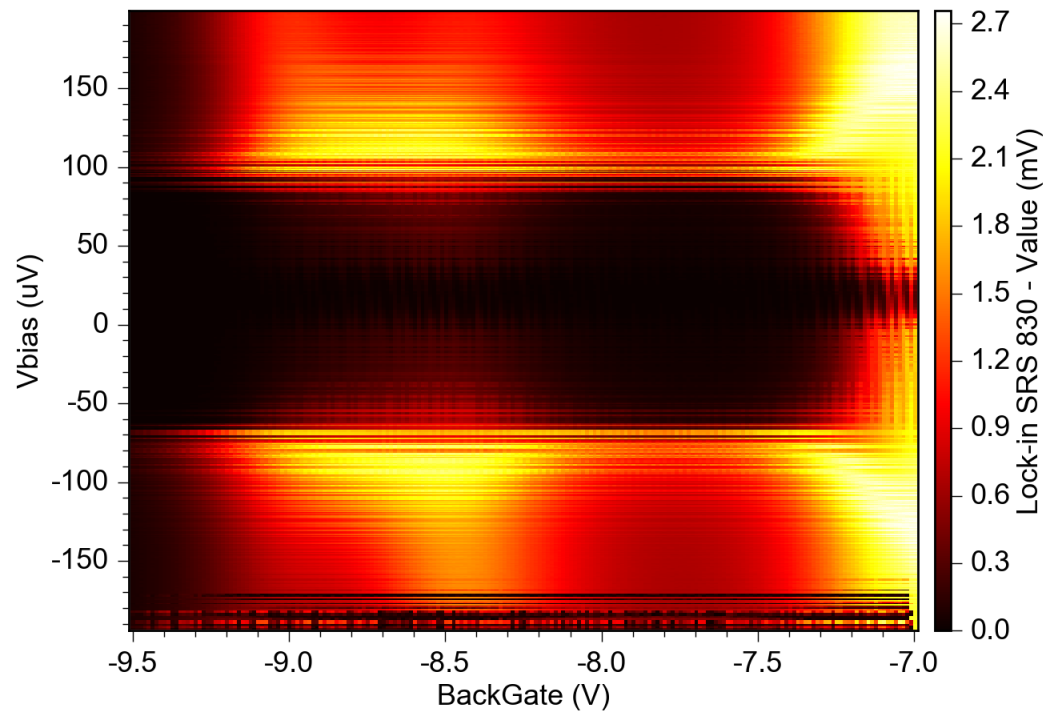
majo15_dev6_LOCK_IN_source17_drain15_100M_sens20mVpernA_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms_B110mT_varying_sidegate

116 mT

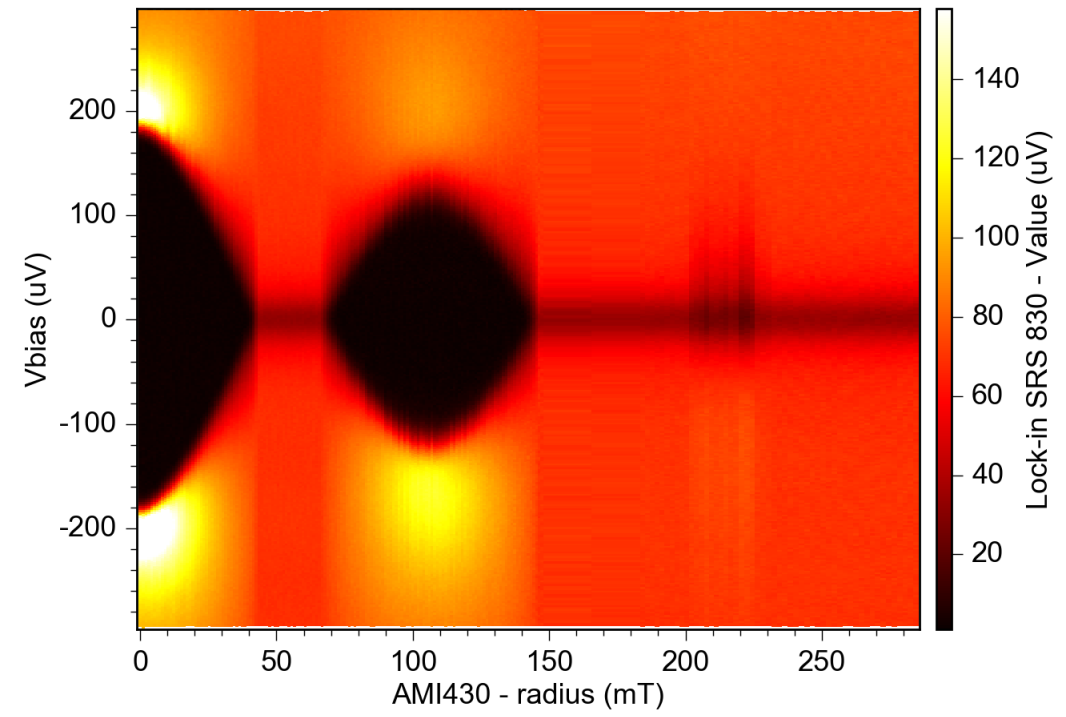


majo15_dev6_LOCK_IN_source17_drain15_100M_sens20mVpernA_lowRin_waitingtime1s_freq_17,7HZ_timecostant_300ms_varyingB_varying_sidegate

Device 13

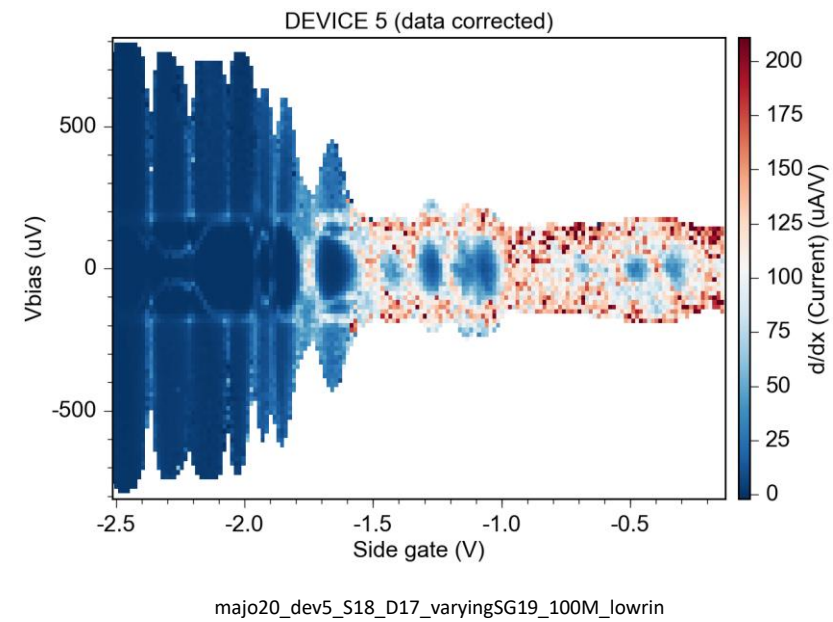
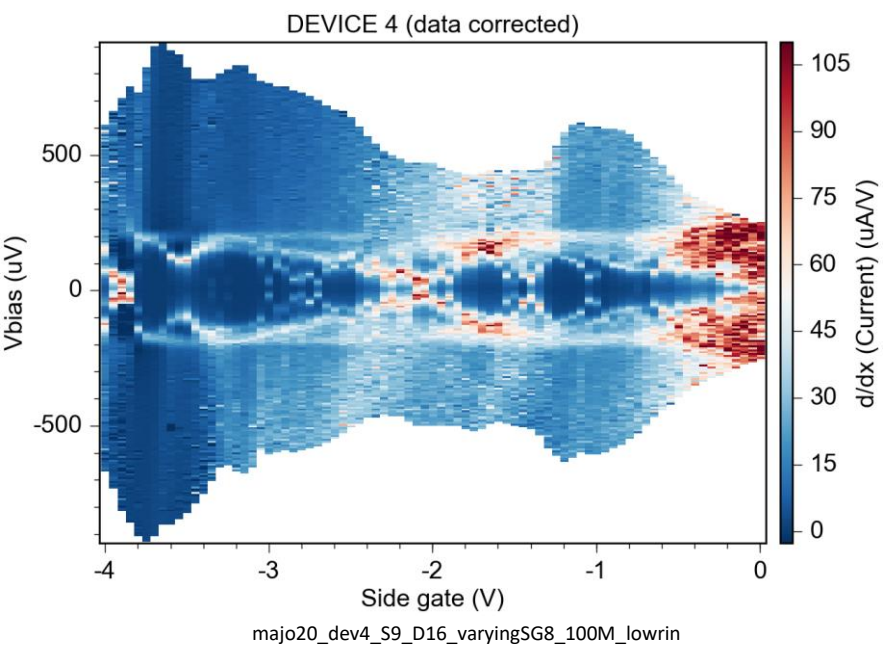
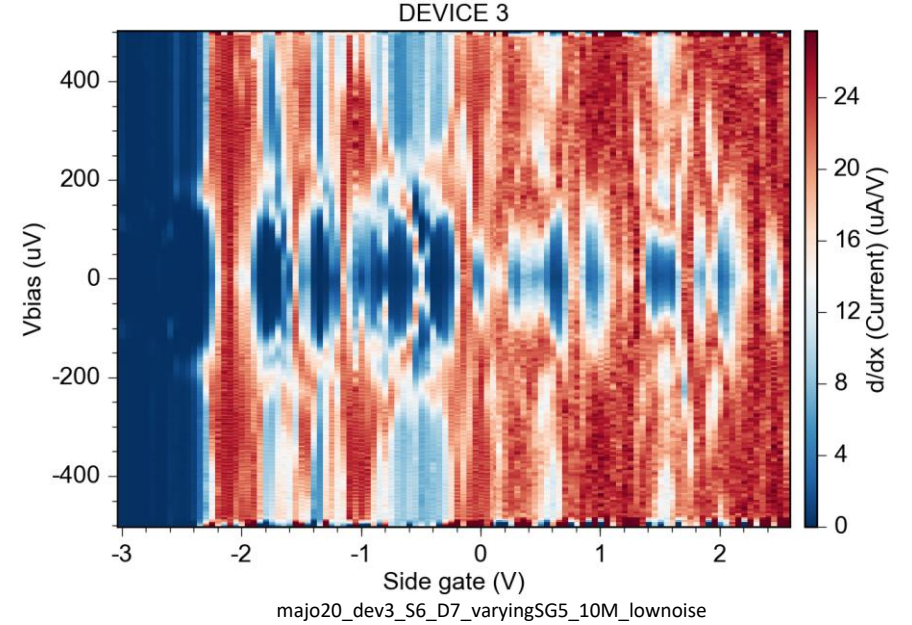
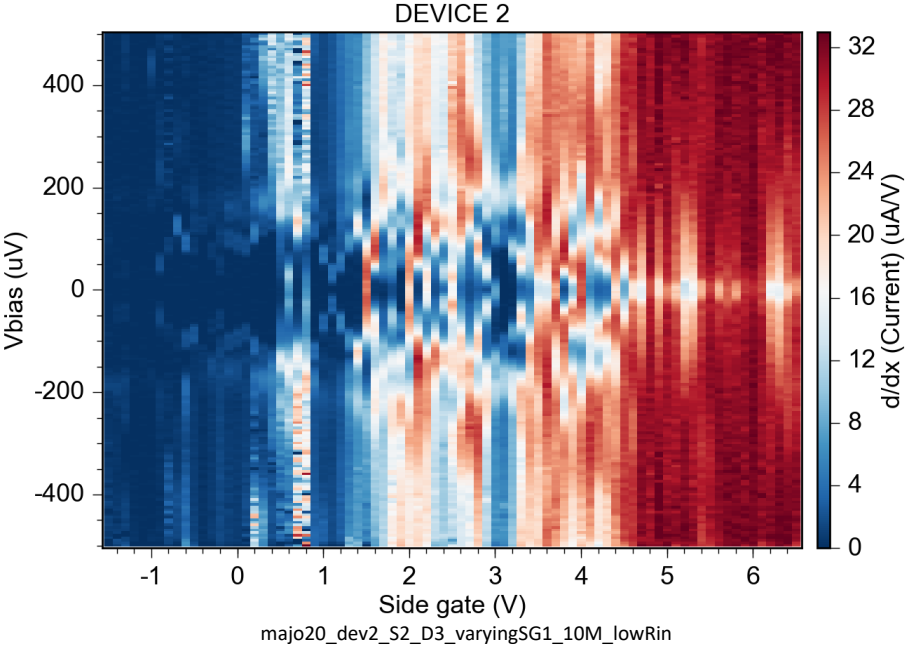


majo15_dev13_LOCK_IN_source38_drain39_10M_sens5mV_lowRin_varyingBG

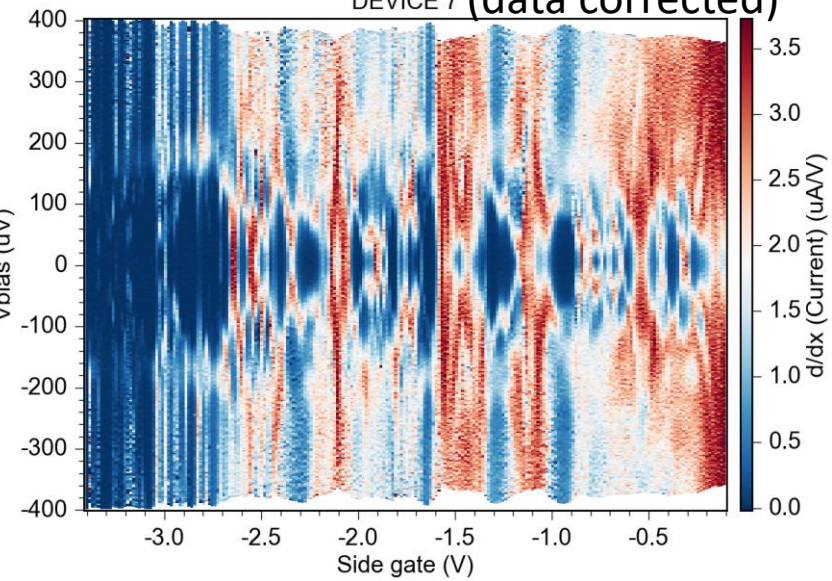


majo15_dev13_LOCK_IN_source38_drain39_10M_sens5mV_lowRin_BG-9,5V_theta102_waitingtime1s_freq_17,7HZ_timecostant_300ms

Majo20

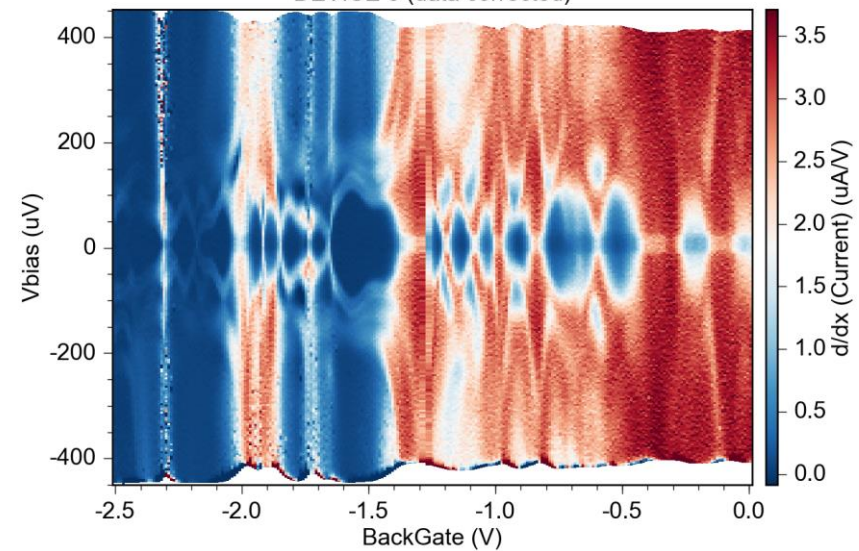


DEVICE 7 (data corrected)



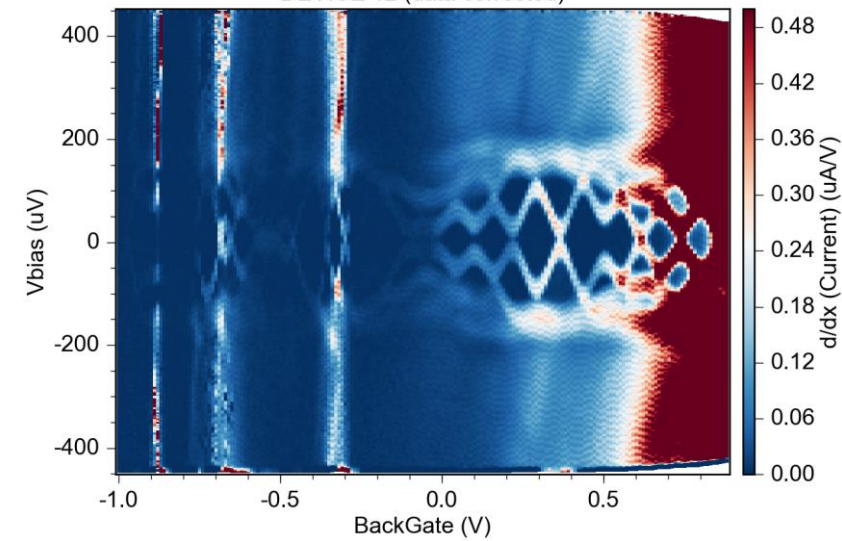
majo20_dev7_S23_D28_varyingSG24_100M_lowRin

DEVICE 8 (data corrected)



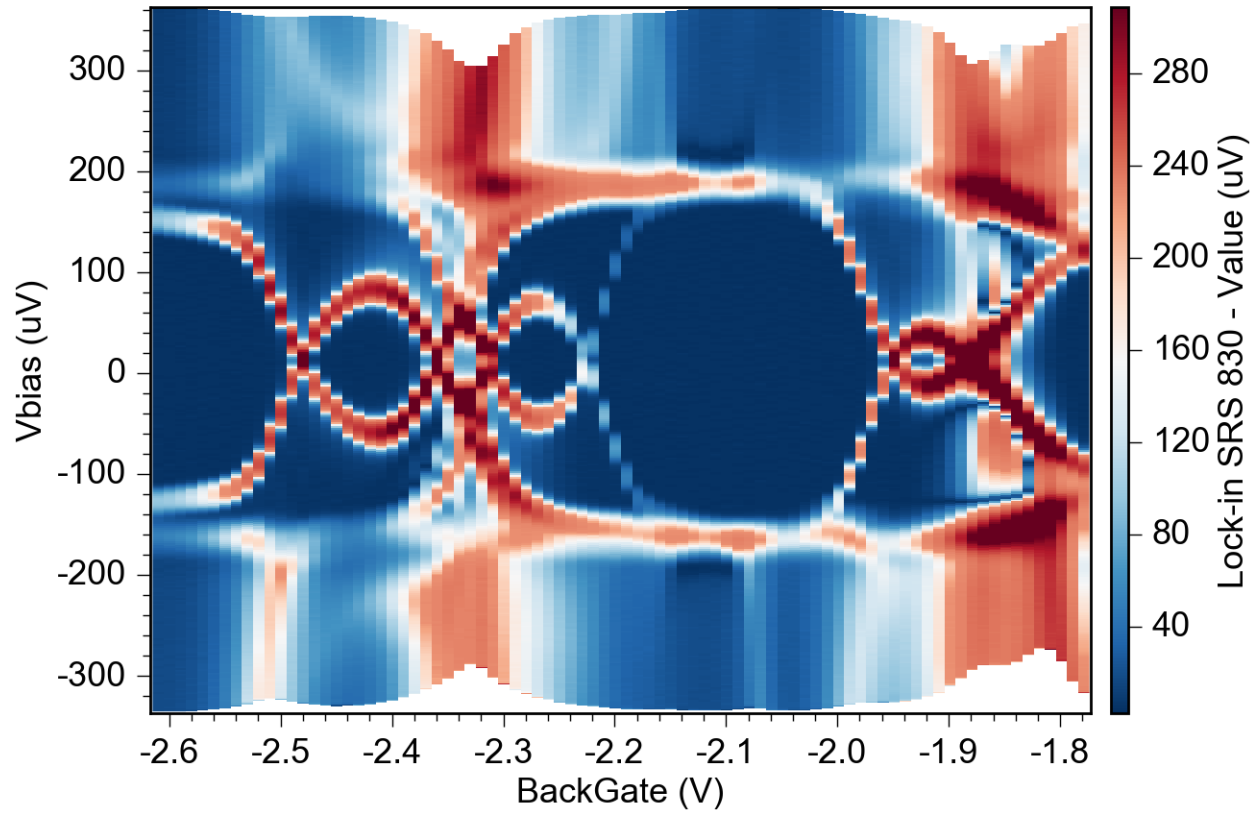
majo20_dev8_S29_D30_varyingBG36_100M_lowRin

DEVICE 12 (data corrected)



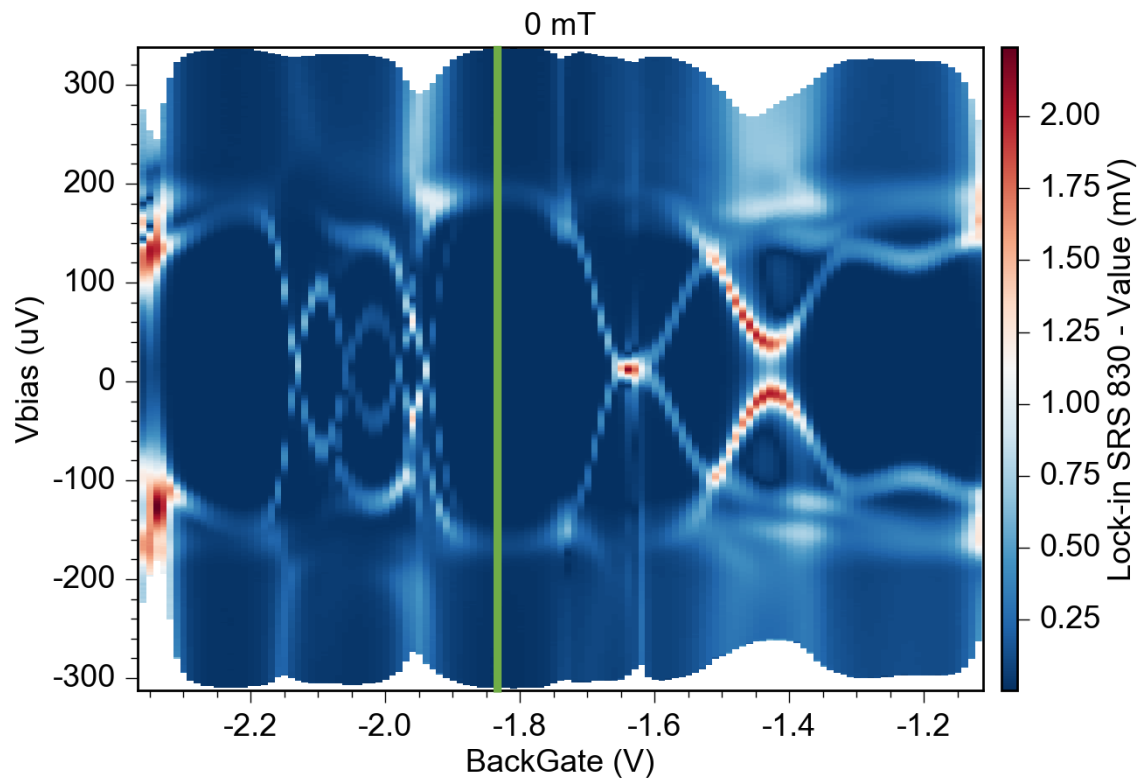
majo20_dev12_S45_D44_varyingBG36_100M_lowRin

device E

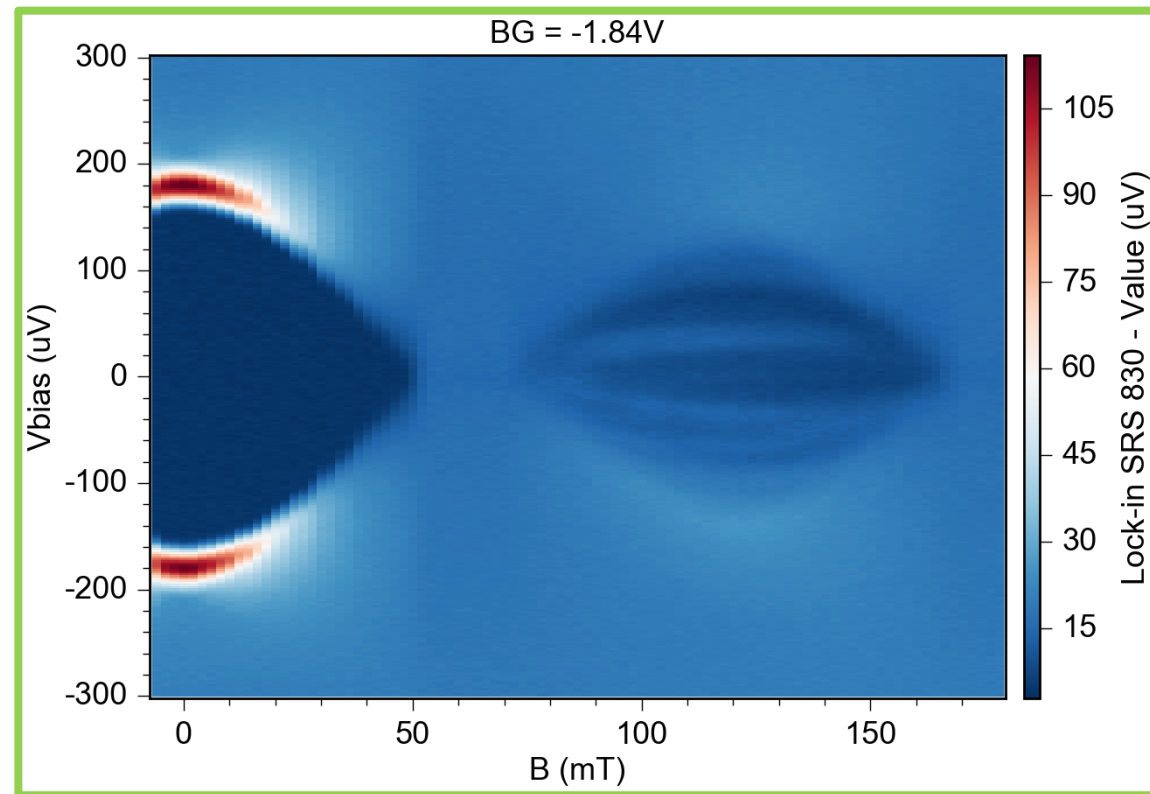


majo20_dev11_LockIn_S42_D41_varyingBG36_10M_lownoise_
sens200uVperA_waitingtime1s_freq_17,7HZ_timecostant_300
ms

device E

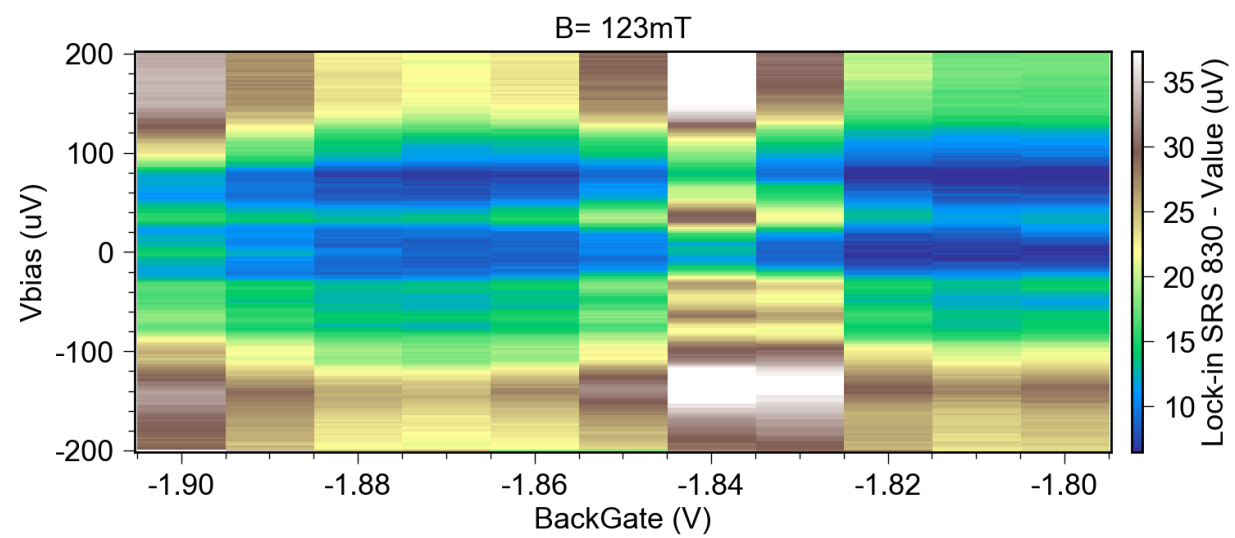
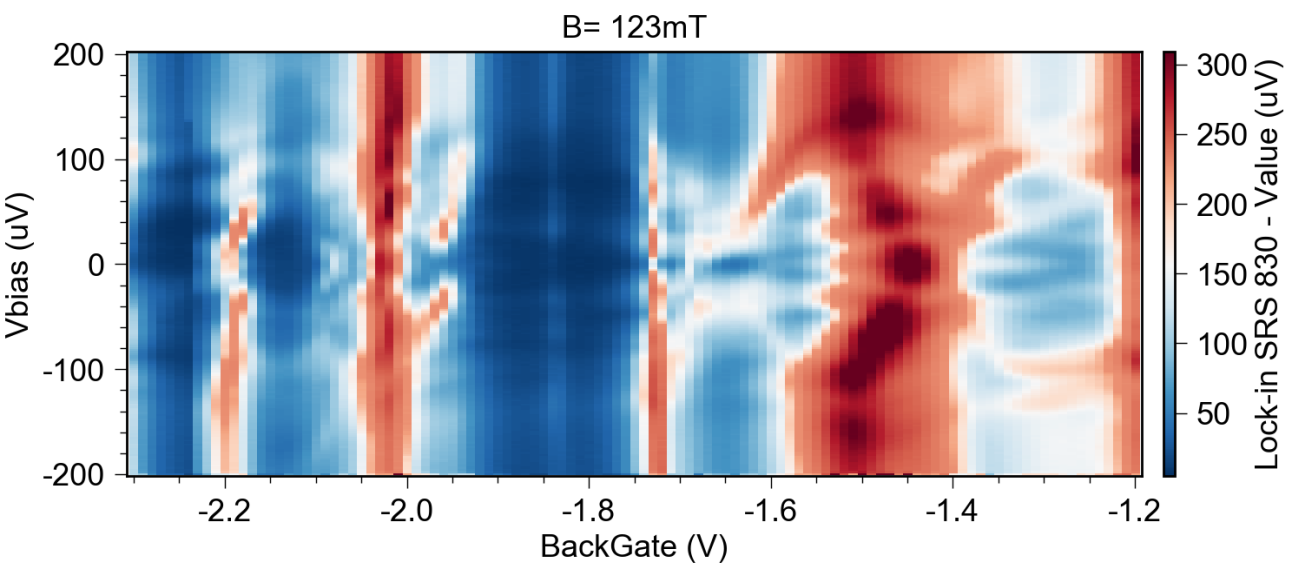


majo20_LockIn_dev11_varyingBG_10M_lownoise__sens2mVpernA_waitingtime1s_freq_17,7HZ_timecostant_300ms_Vexc10uV



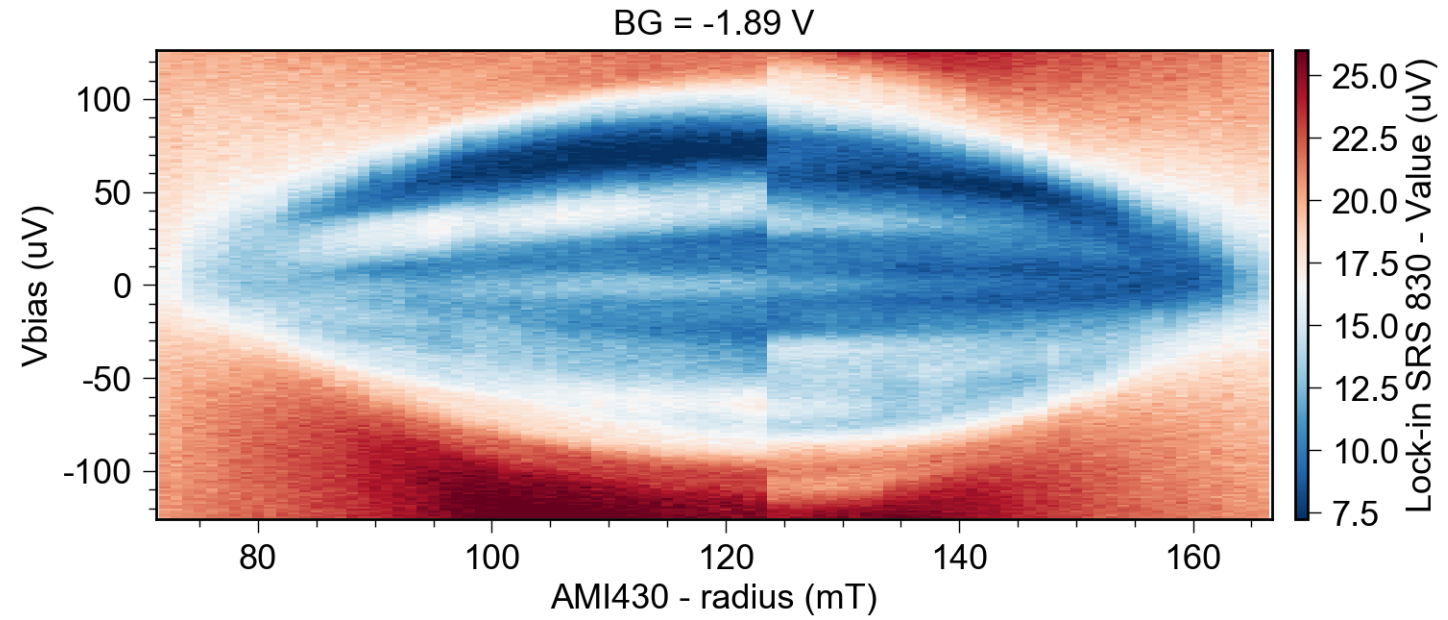
majo20_LockIn_dev11_BG-1,84_varyingB_10M_lownoise__sens2mVpernA_waitingtime1s_freq_17,7HZ_timecostant_300ms_Vexc10uV

device E



majo20_LockIn_dev11_varyingBG_B123mT_10M_lownoise__se
ns200mVperpA_waitingtime1s_freq_17,7HZ_timecostant_300
ms_Vexc10uV

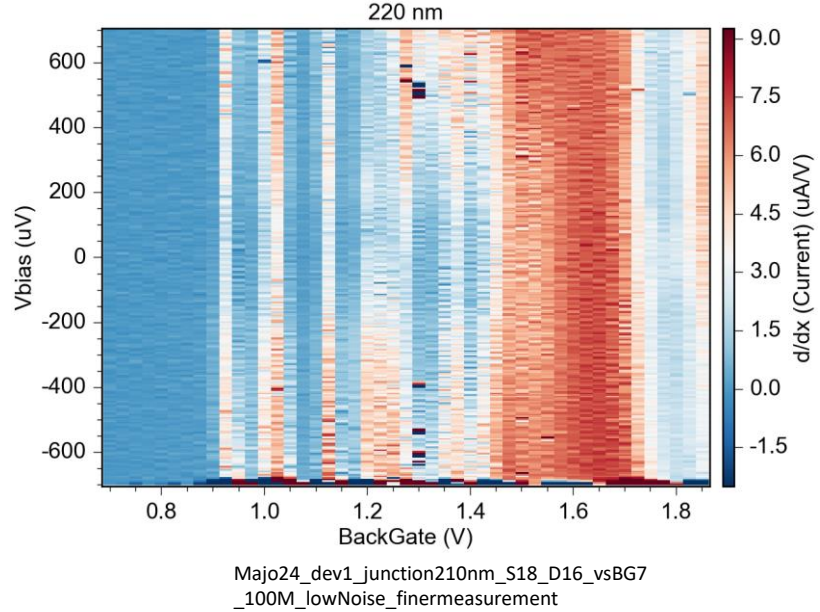
device E



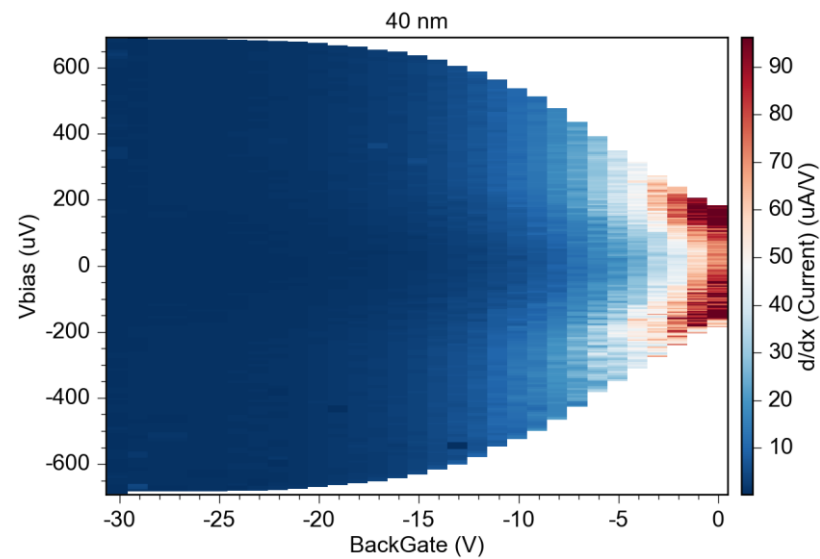
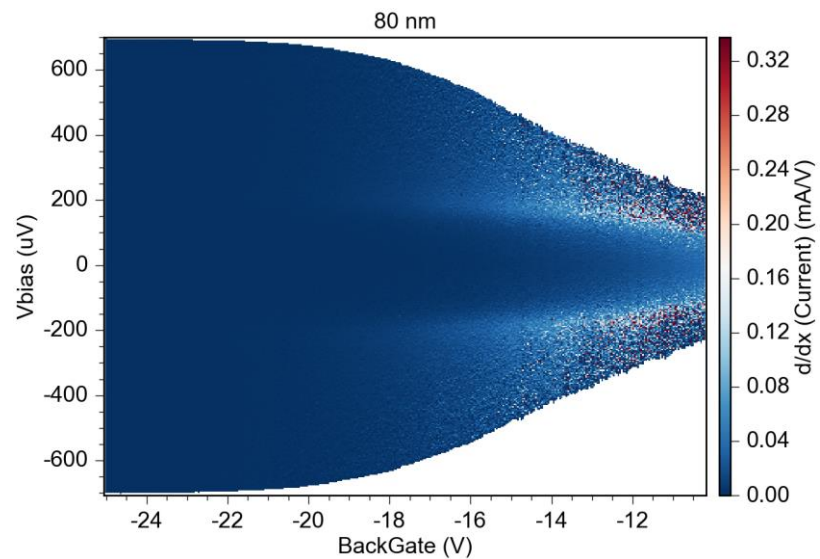
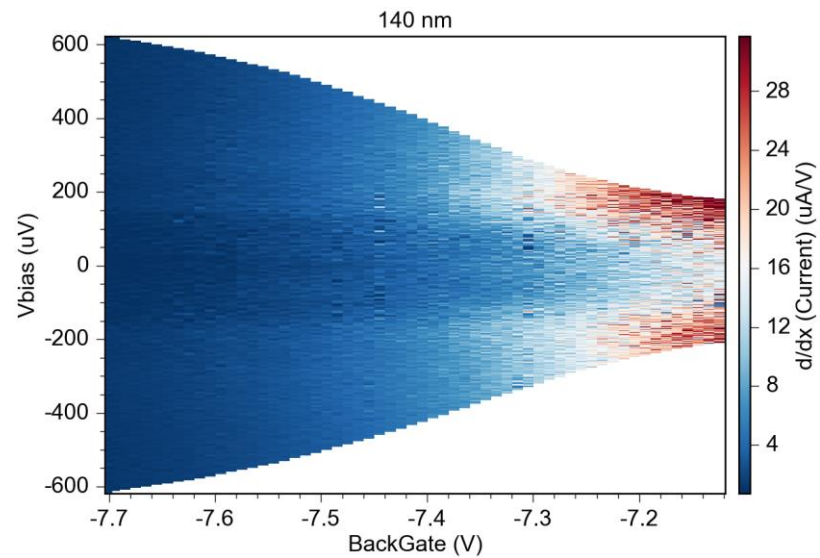
majo20_LockIn_dev11_BG-
1,89V_varyingB_10M_lownoise__sens50uVperpA_waitingtime
1s_freq_17,7HZ_timecostant_300ms_Vexc10uVZOOM1stlobe

After this measurement the device became switchy!!!! No more data...

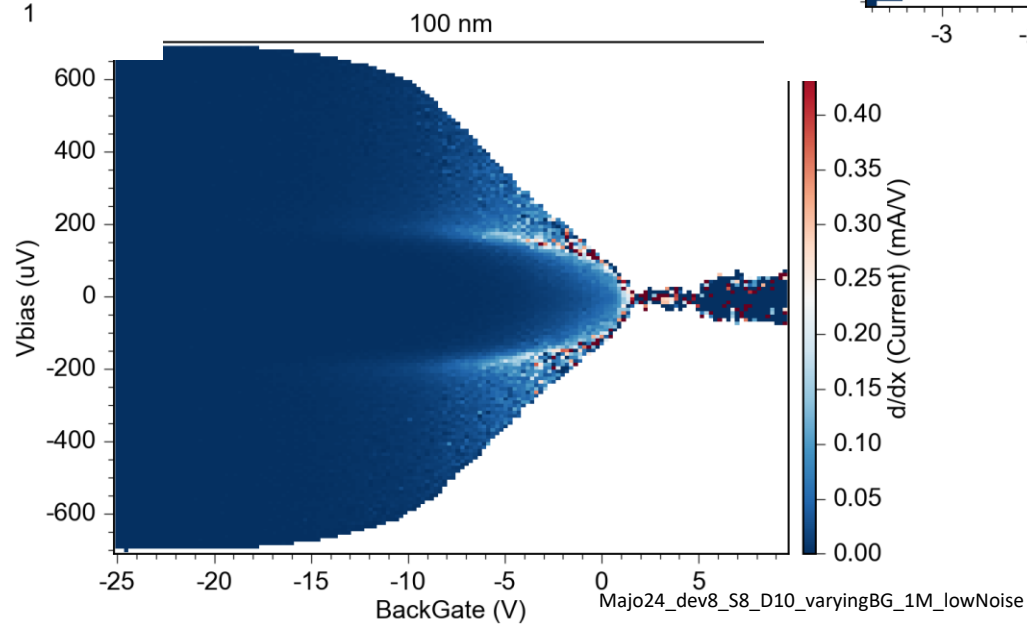
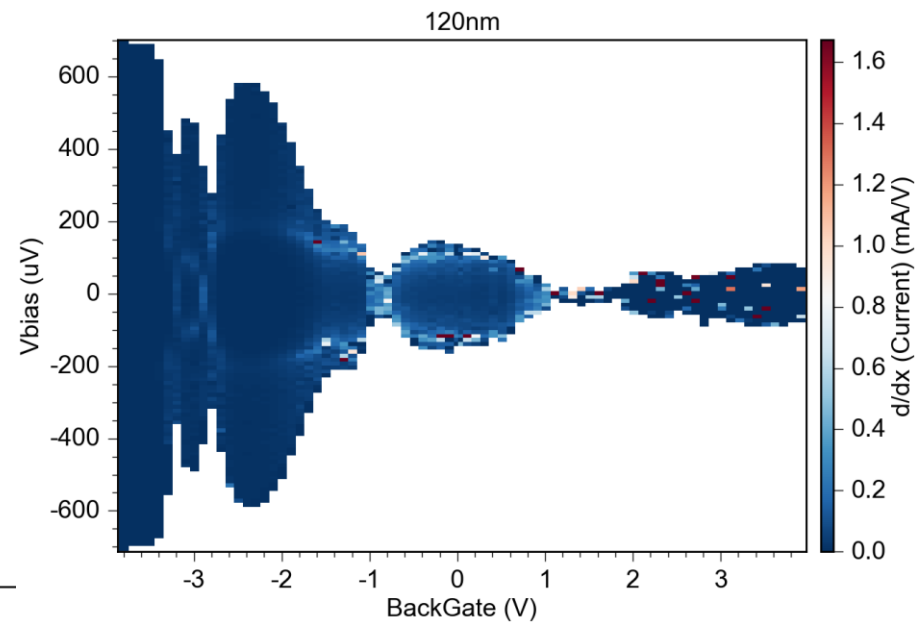
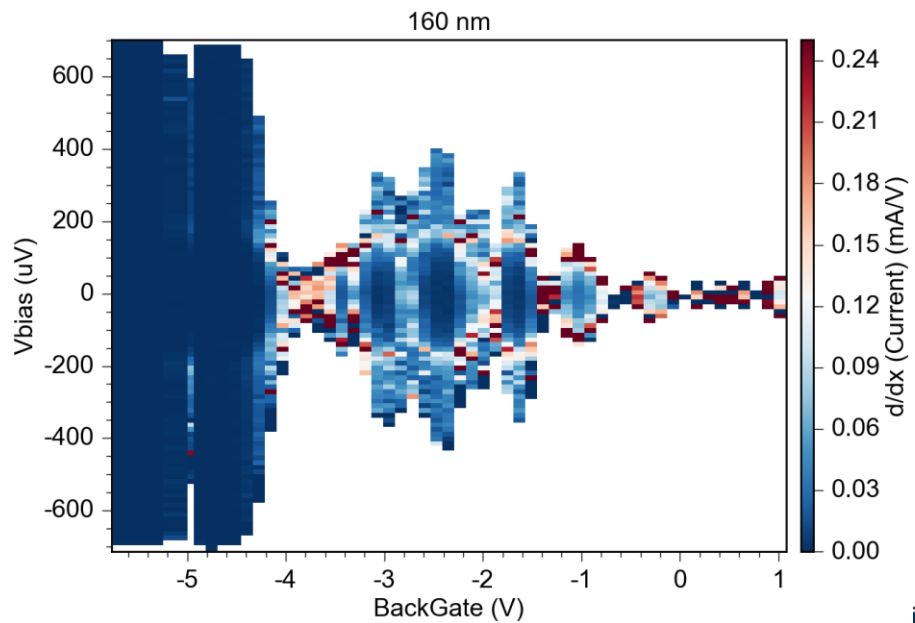
Majo24



First cooldown



second cooldown

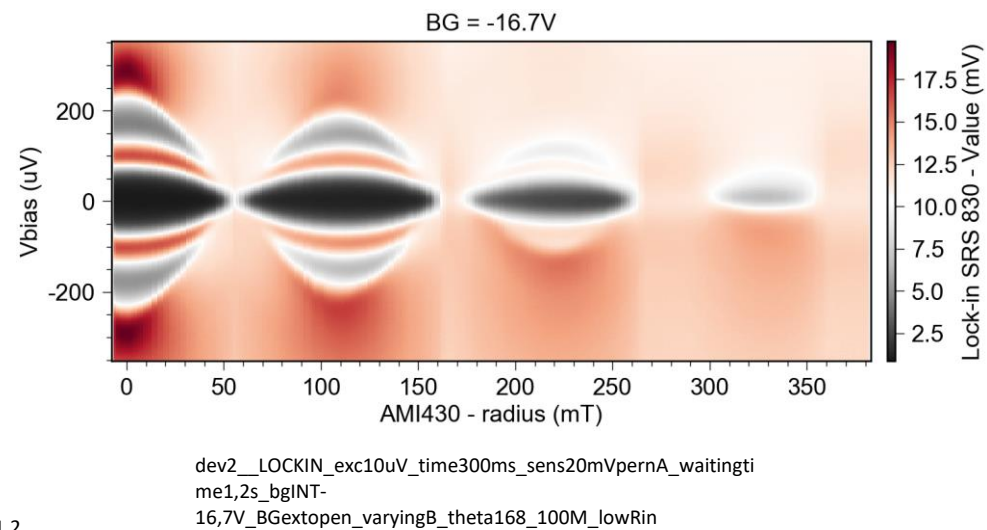
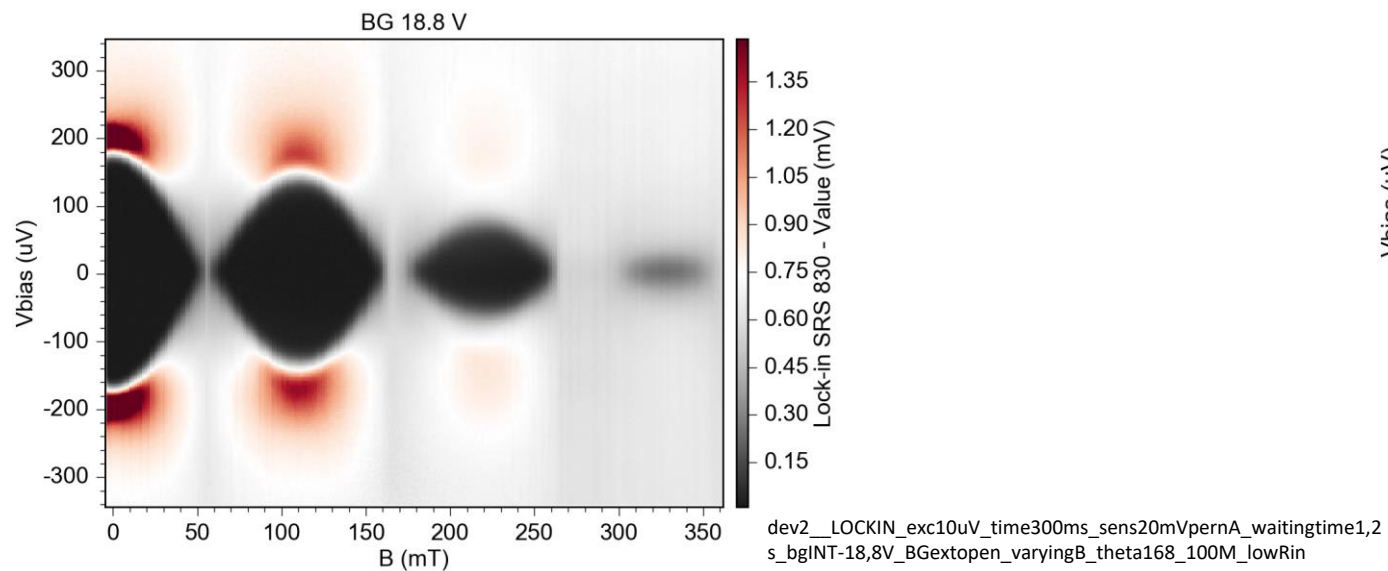
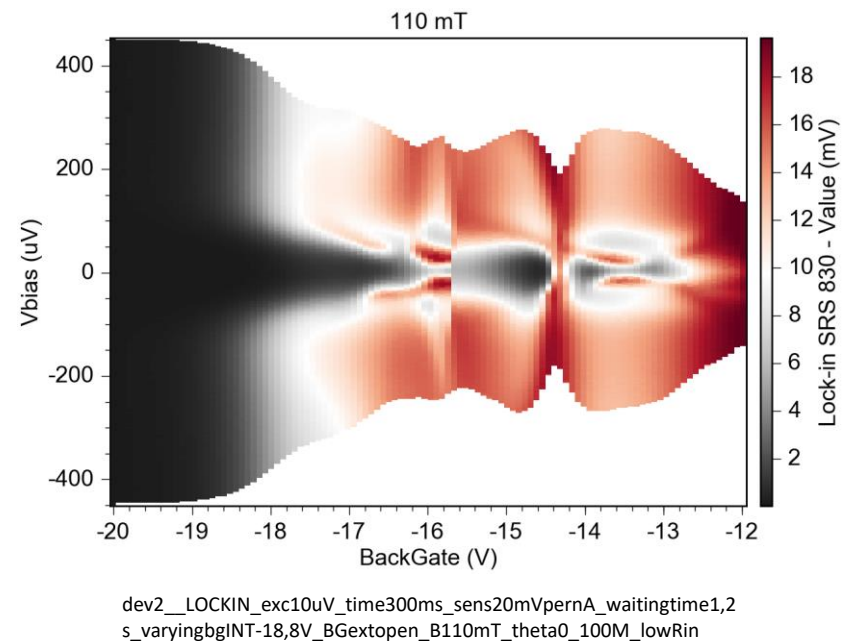
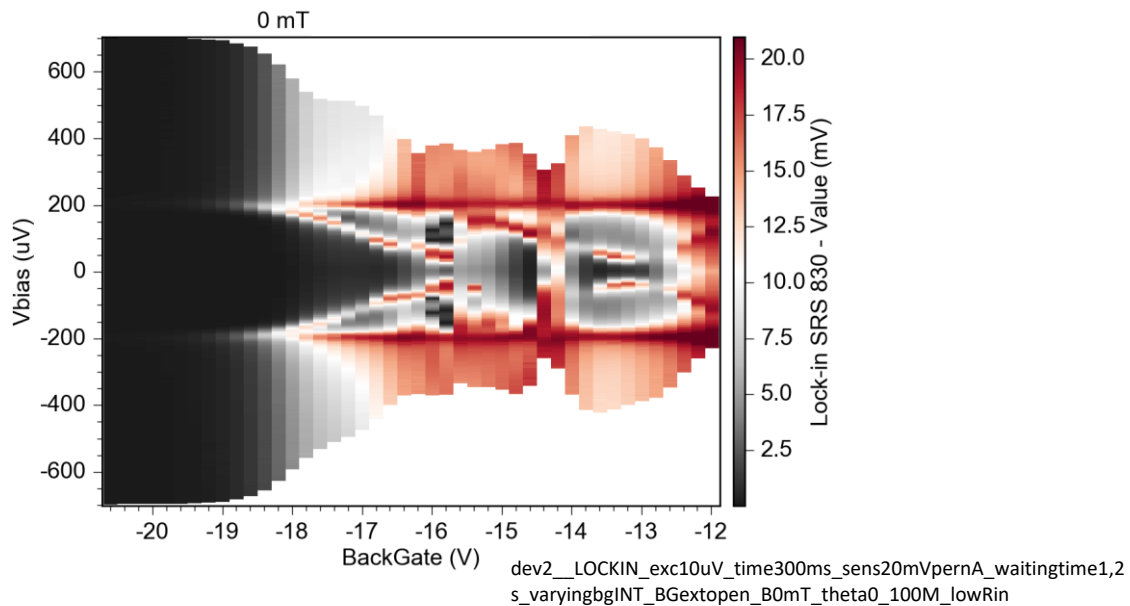


Device	Tunnel junction from design (nm)	Tunnel junction from SEM (nm)	Subgap features
1	220	210	YES
2	200	202-172	Probably off
3	180	182-150	NO
4	160	Exploded	YES
5	140	Exploded	NO
6	120	123	YES
7	100	140-114	Probably off
8	100	80	NO
9	80	70	NO
10	60	44	Difficult to tune! (probably NO features)
11	40	60-40	NO
12	25	22	No tunable
13	0	20	Broken device
14	0	0	No tunable

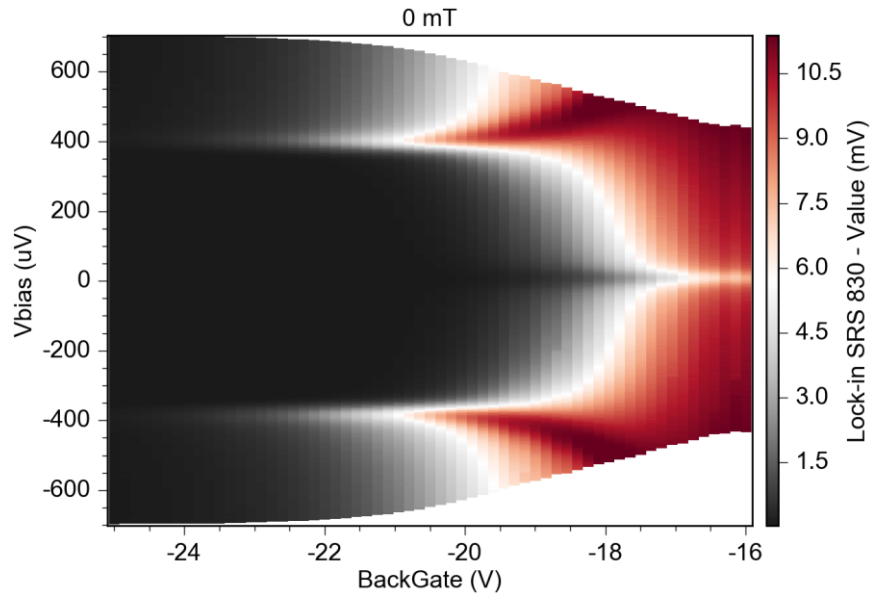
- Tunnel junction < 100 nm NO subgap feature
- Around 120-160 nm, sometimes I have subgap, sometimes not (they could be difficult to see them)
- Tunnel junction > 150 nm I have subgap states most of the times!

Majo30

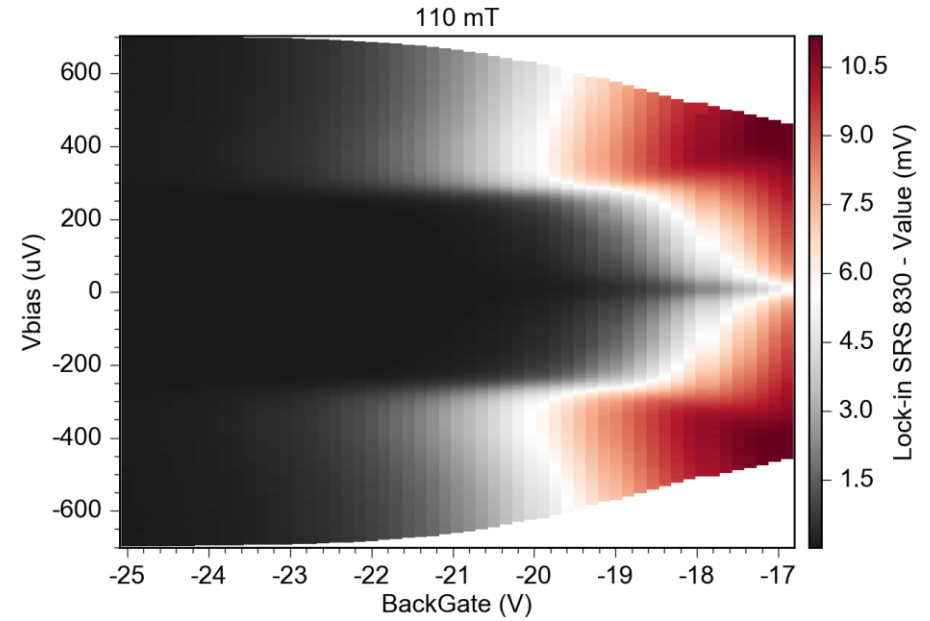
DEVICE 2 (ABS) – SEM image of this device showed a very asymmetric tunnel junction!



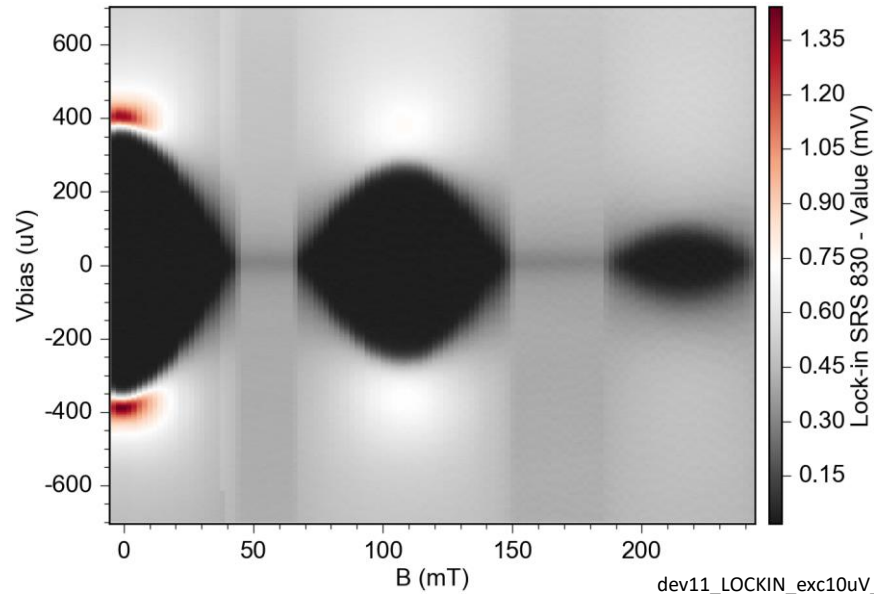
DEVICE 11 (big gap, never understood why...)



dev11_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1_varyingbgINT_BGextopen_B0mT_theta0_100M_lowRin



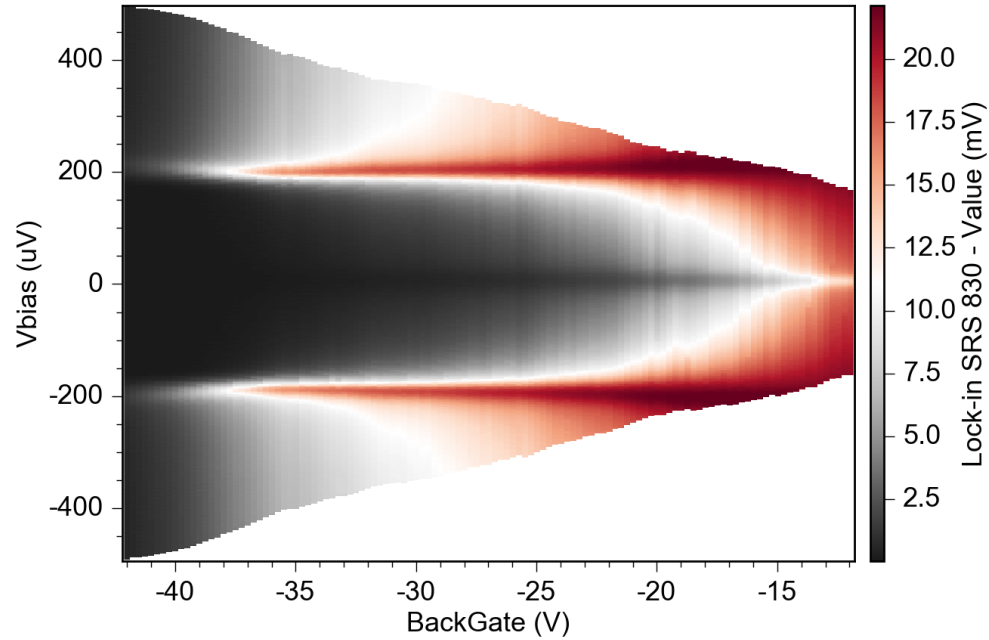
dev11_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1_varyingbgINT-_BGextopen_B108mT_theta162_100M_lowRin



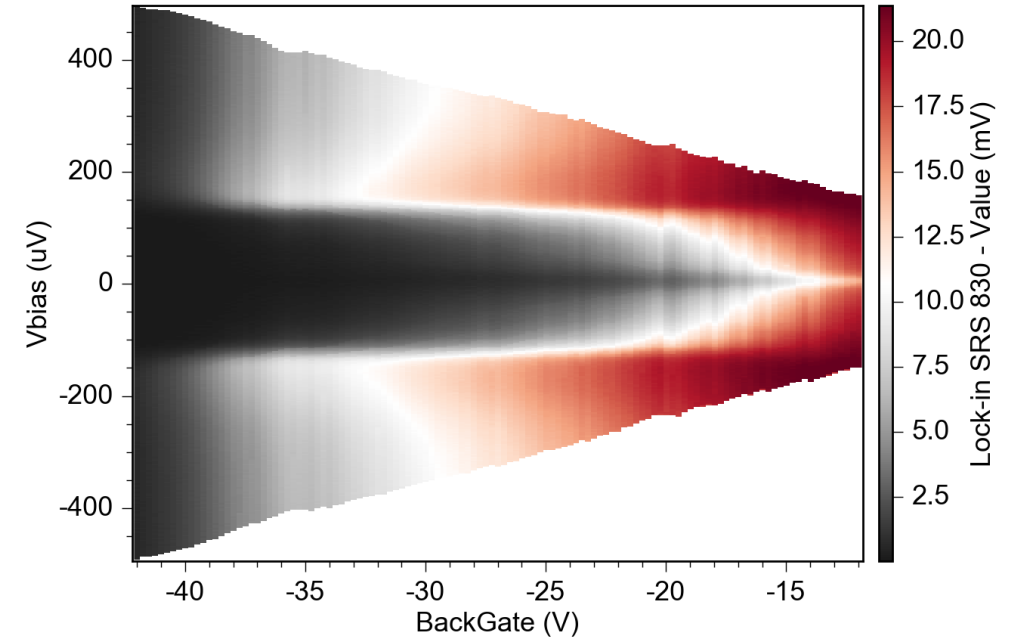
dev11_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1_bgINT-22,6V_BGextopen_varyingB_theta162_100M_lowRin

DEVICE M

0 mT

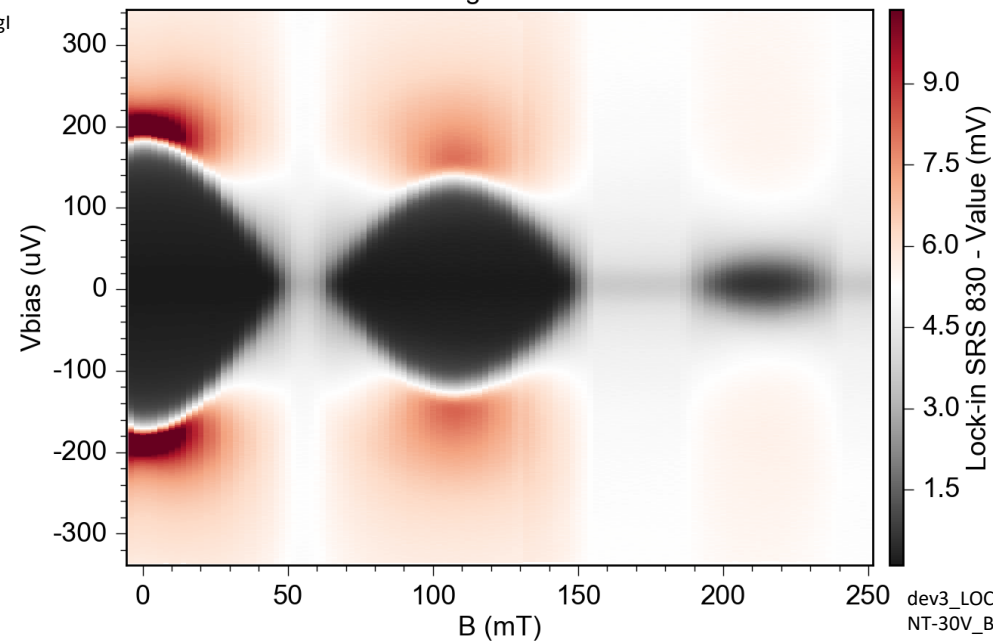


110 mT



backgate -30 V

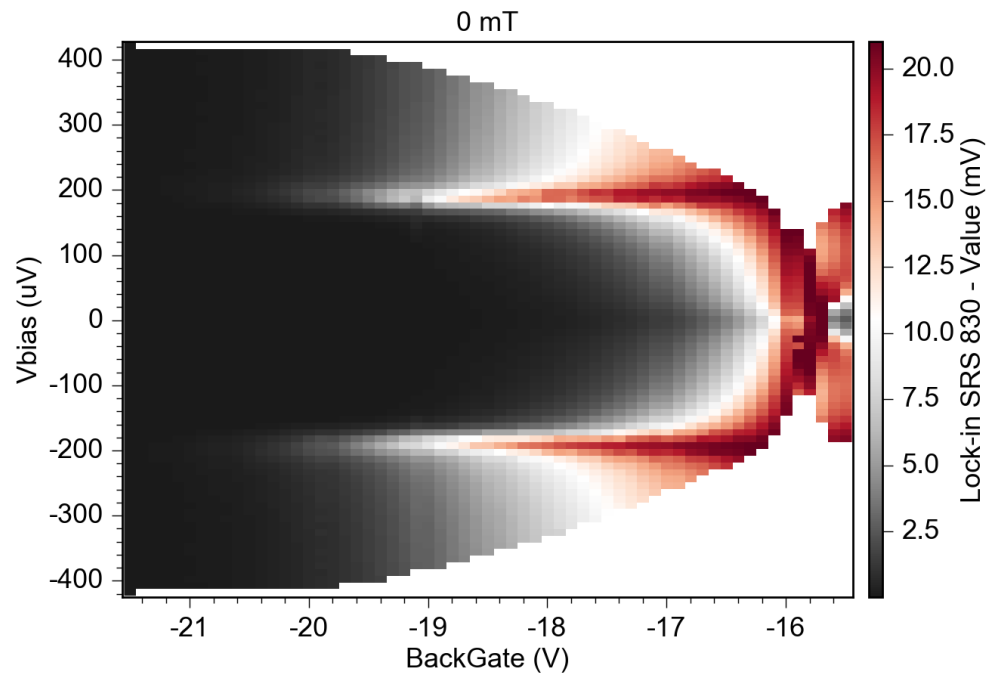
dev3_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1bgl
NT-30V_BGextopen_varyingB_theta0_100M_lowRin



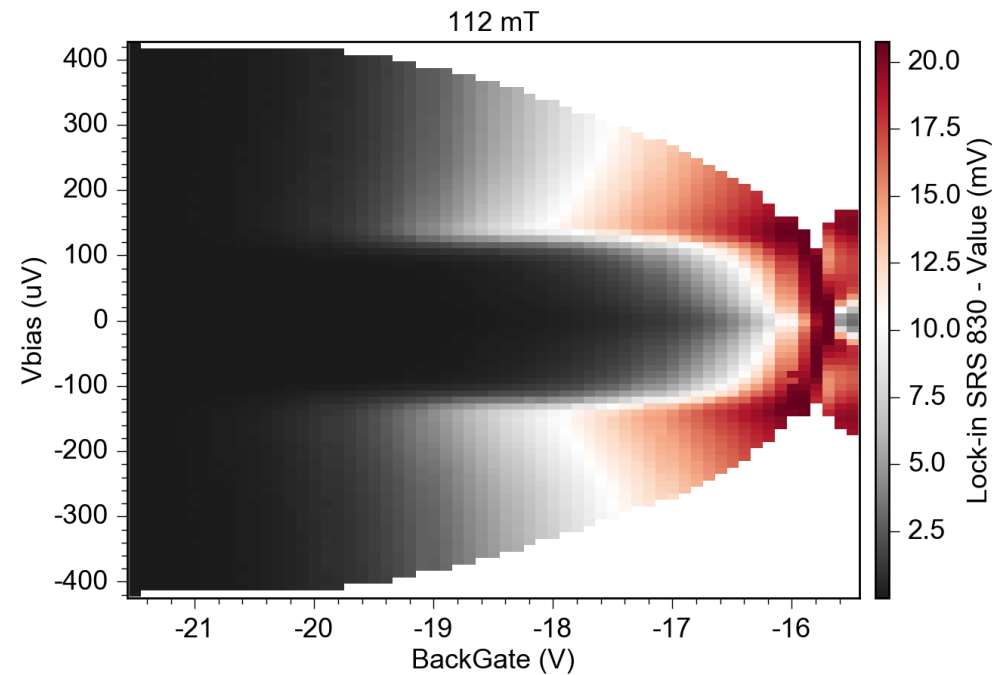
dev3_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1bgl
NT-30V_BGextopen_varyingB_theta0_100M_lowRin

dev3_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1bgl
NT-30V_BGextopen_varyingB_theta0_100M_lowRin

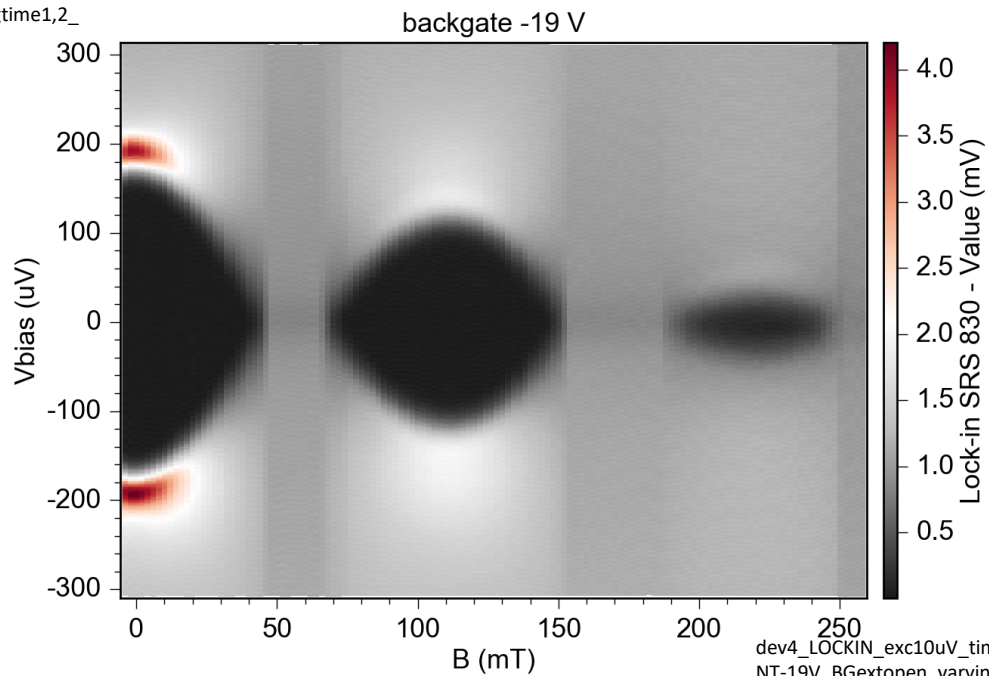
DEVICE J



dev4_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1,2_
bgINT-19V_BGextopen_varyingB_theta32_100M_lowRin



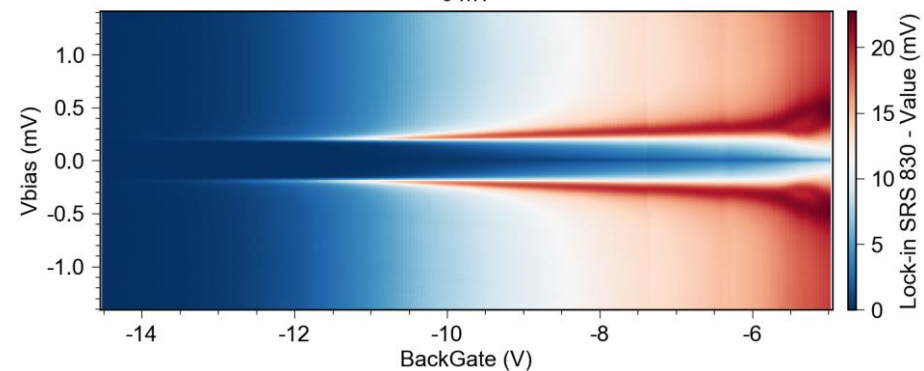
dev4_LOCKIN_exc10uV_time300ms_sens20mVpernA_waitingtime1,2_
bgINT-19V_BGextopen_varyingB_theta32_100M_lowRin



dev4_LOCKIN_exc10uV_time300ms_sens5mVpernA_waitingtime1_bgI
NT-19V_BGextopen_varyingB_theta32_100M_lowRin

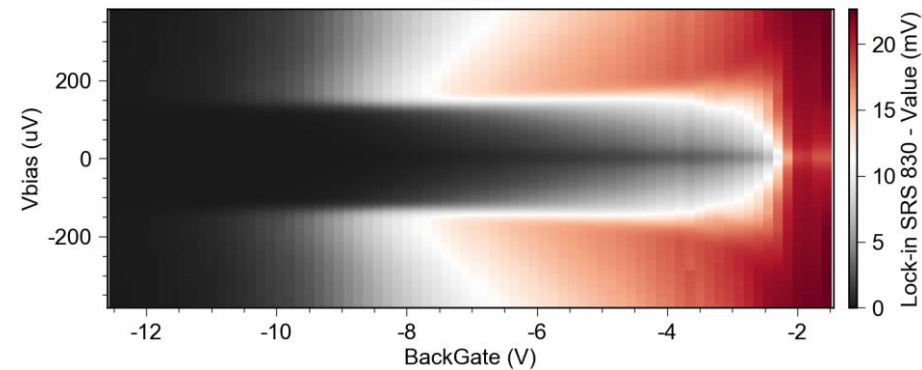
DEVICE F

0 mT



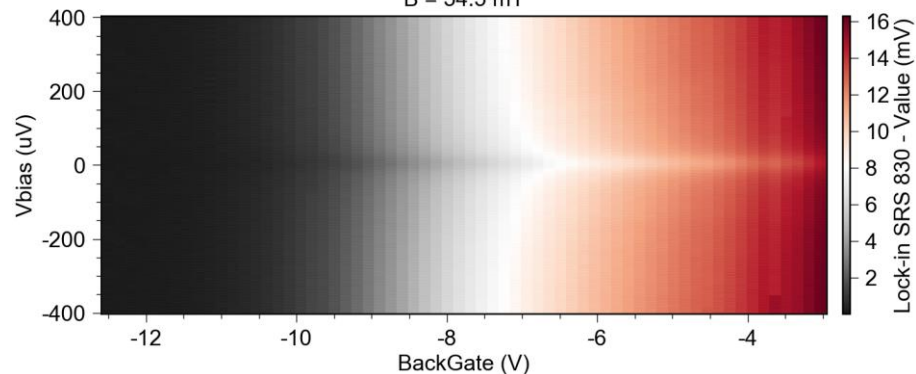
dev6_LOCKIN_exc10uV_filter6dB_time300ms_sens20mVpernA_waitin
gtime1_varyingbgINT_BGextopen_B0and107mT_theta178_100M_low
Ri

107 mT



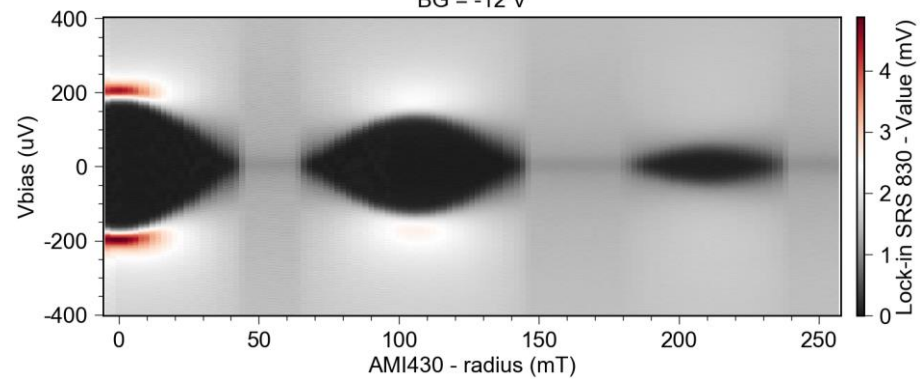
dev6_LOCKIN_exc10uV_filter6dB_time300ms_sens20mVpernA_waitin
gtime1_varyingbgINT_BGextopen_B107mT_theta178_100M_lowRi

B = 54.5 mT



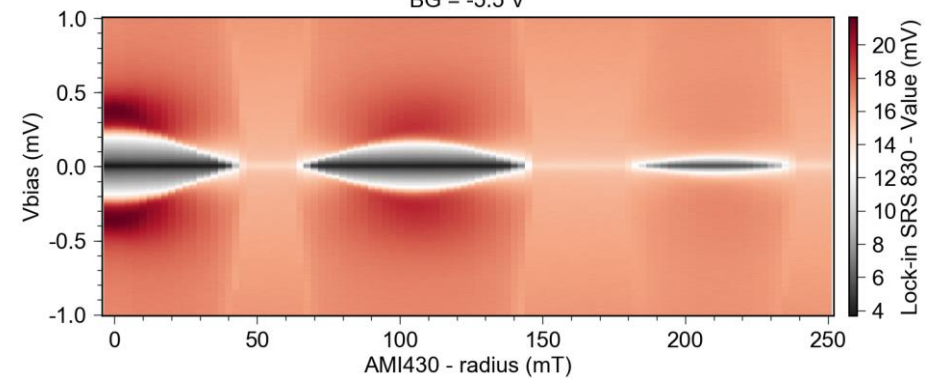
dev6_LOCKIN_exc10uV_filter6dB_time300ms_sens20mVp
ernA_waitingtime1_varyingbgINT_BGextopen_B54.5mT_t
heta178_100M_lowRi

BG = -12 V



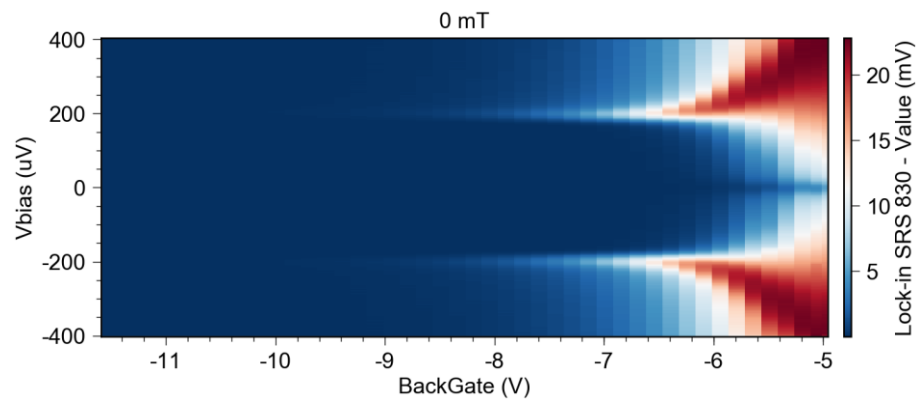
dev6_LOCKIN_exc10uV_filter6dB_time300ms_sens20mVpernA_waitin
gtime1_bgINT-12_BGextopen_varyingB_theta178_100M_lowRi

BG = -5.5 V

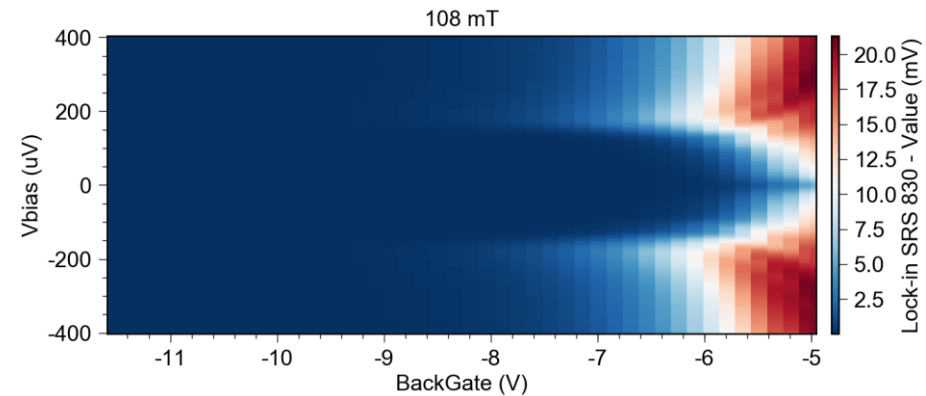


dev6_LOCKIN_exc10uV_filter6dB_time300ms_sens20mVpernA_waitin
gtime1_bgINT-5,5_BGextopen_varyingB_theta178_100M_lowRi

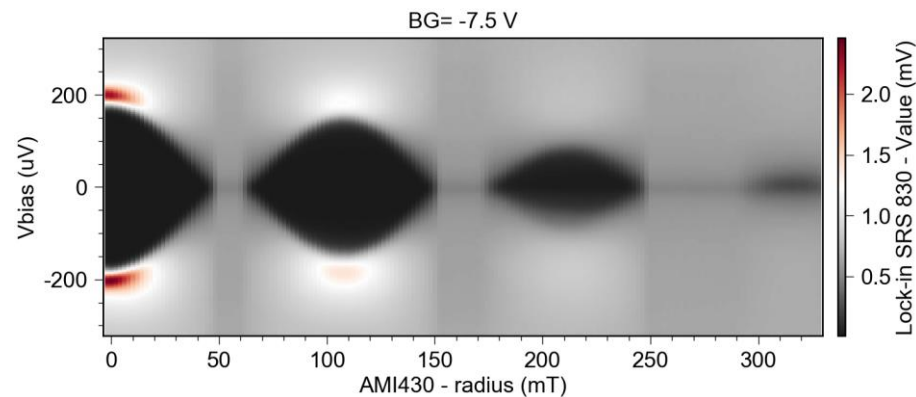
DEVICE I



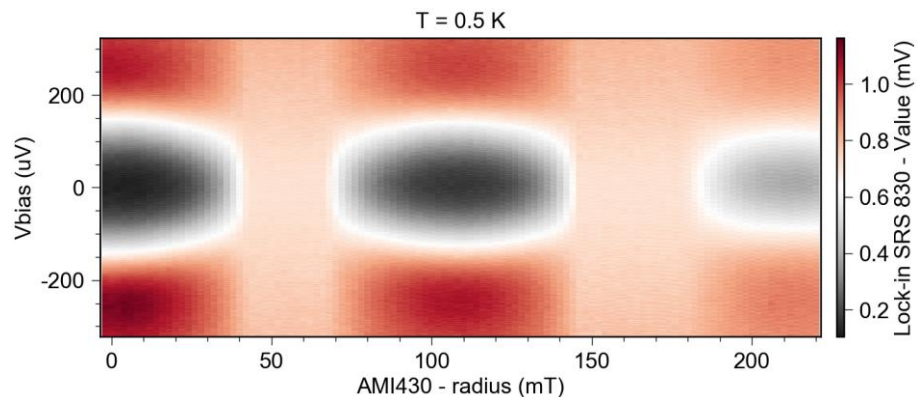
dev9_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpern
A_waitingtime1_varyingbgINT_BGextopen_B0and180mT_theta97_100
M_lowRin



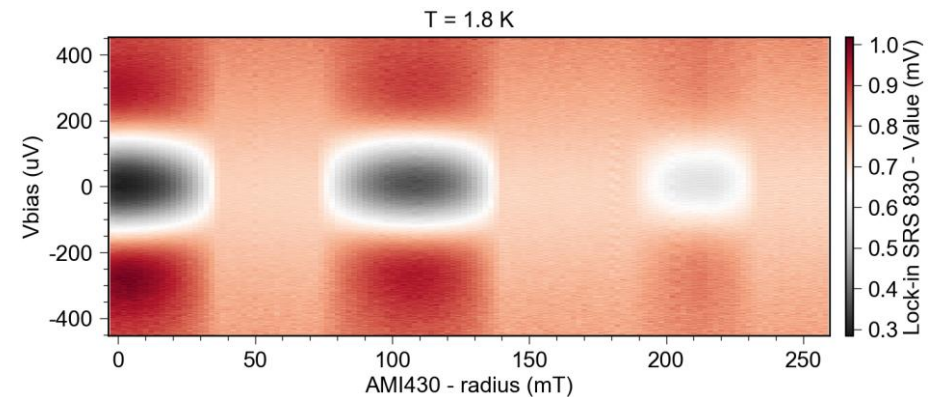
dev9_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpern
A_waitingtime1_varyingbgINT_BGextopen_B0and180mT_theta97_100
M_lowRin



dev9_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpern
A_waitingtime1_bgINT-
7,5V_BGextopen_varyingB_theta97_100M_lowRin

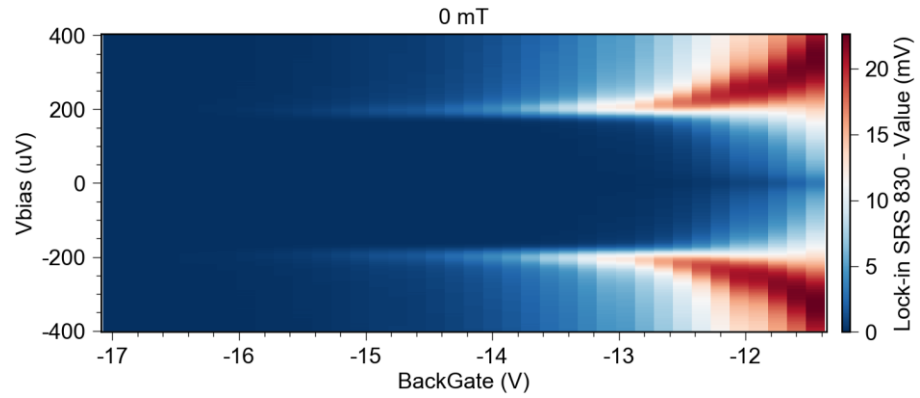


dev9_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpern
A_waitingtime1_bgINT-
7,5V_BGextopen_varyingB_theta97_100M_lowRin_T520mK

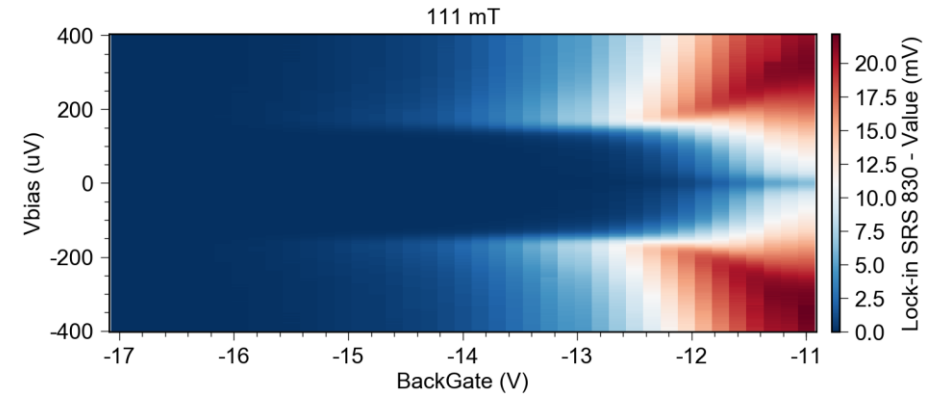


dev9_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVpern
A_waitingtime1_bgINT-
7,5V_BGextopen_varyingB_theta97_100M_lowRin_T725mK

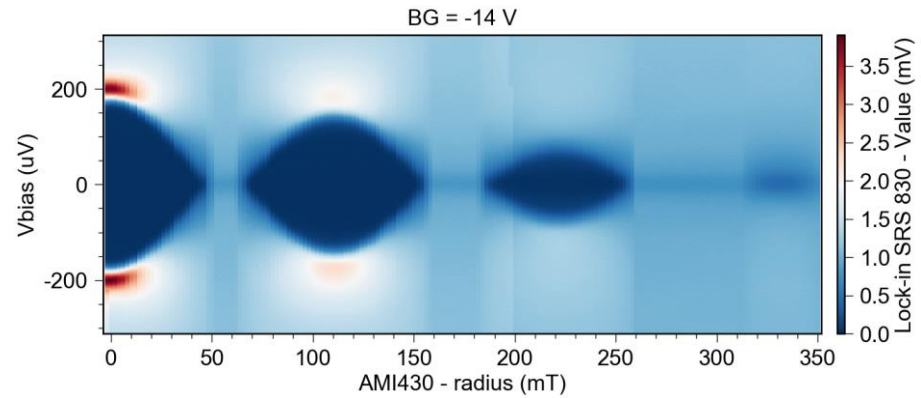
DEVICE K



dev13_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVper
nA_waitingtime1_varyingbgINT_BGextopen_B0mT_theta0_100M_low
Rin

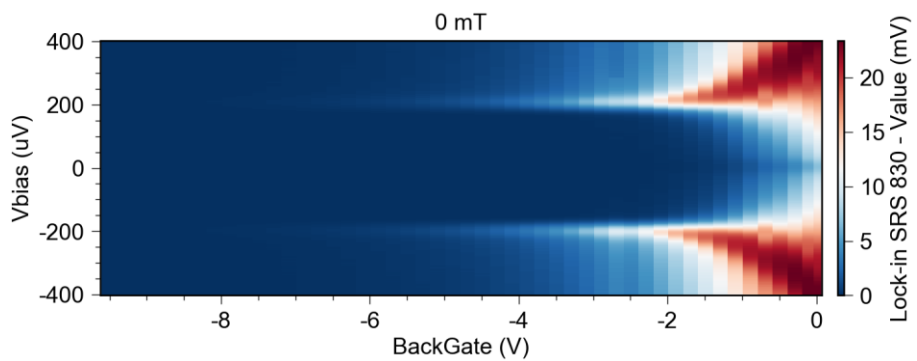


dev13_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVper
nA_waitingtime1_varyingbgINT_BGextopen_B111mT_theta169_100M
_lowRin

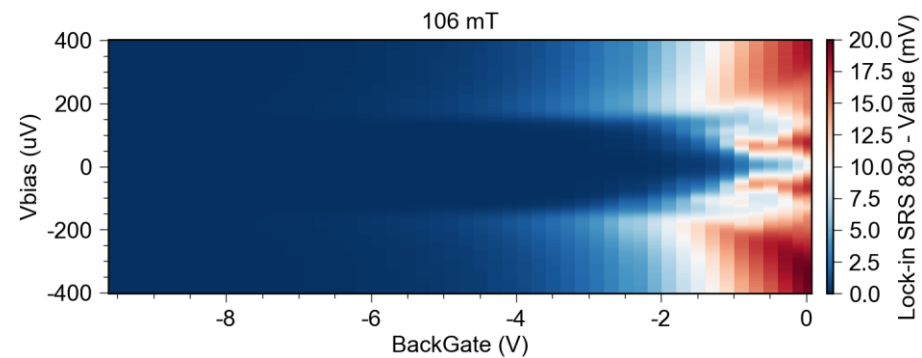


dev13_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVper
nA_waitingtime1_bgINT15,5V_BGextopen_varyingB_theta169_100M_
lowRin

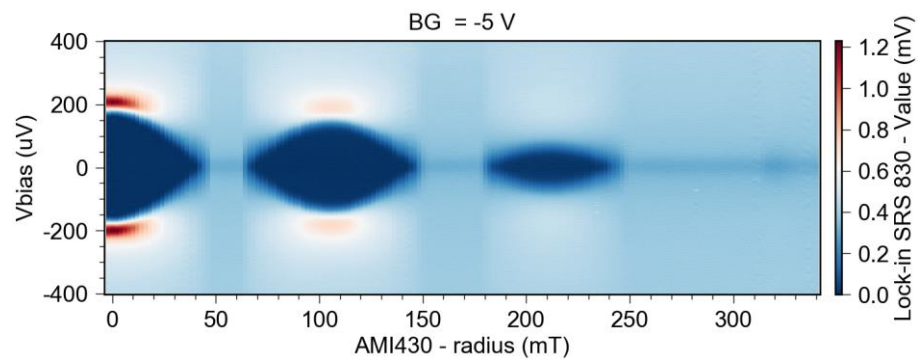
DEVICE L



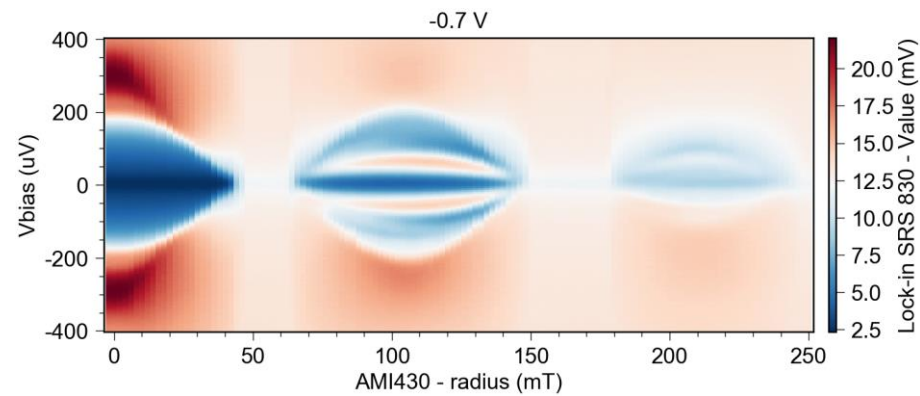
dev14_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVp
ernA_waitingtime1_varyingbgINT_BGextopen_B0_106mT_theta4_100
M_lowRin



dev14_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVp
ernA_waitingtime1_varyingbgINT_BGextopen_B0_106mT_theta4_100
M_lowRin

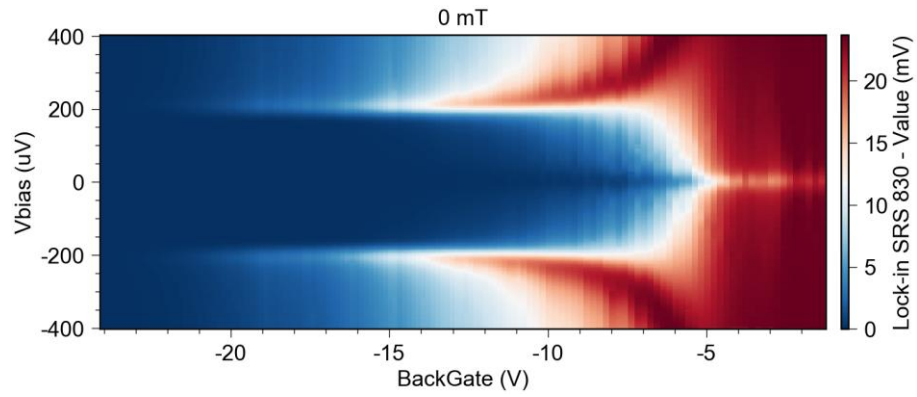


dev14_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVp
ernA_waitingtime1_bgINT-
6V_BGextopen_varyingB_theta4_100M_lowRin

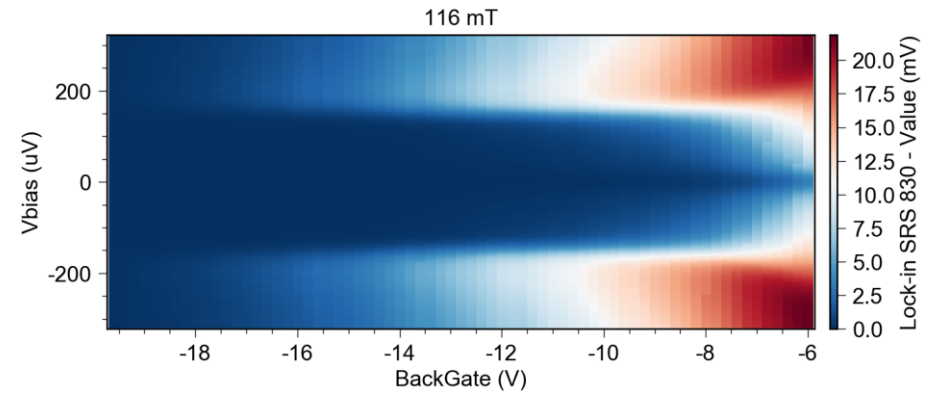


dev14_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVp
ernA_waitingtime1_varyingbgINT_BGextopen_B0_106mT_theta4_100
M_lowRin

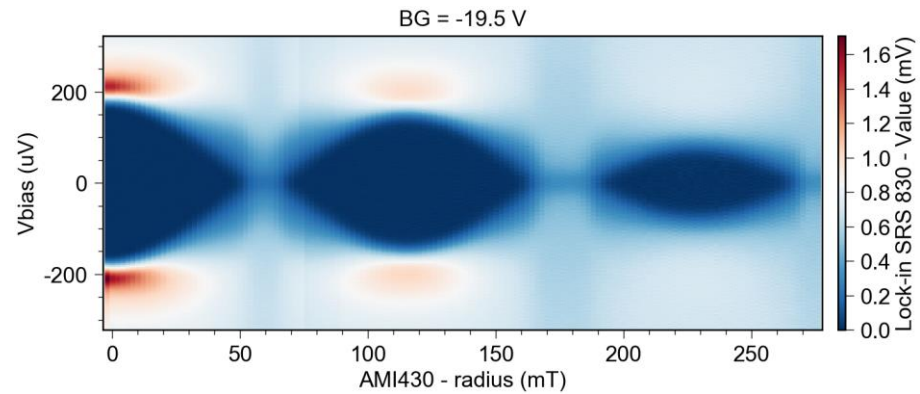
DEVICE A



dev15_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVper
nA_waitingtime1_varyingbgINT_BGextopen_B0mT_theta94_100M_lo
wRi



dev15_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVper
nA_waitingtime1_varyingbgINT_BGextopen_B116mT_theta94_100M_
lowR

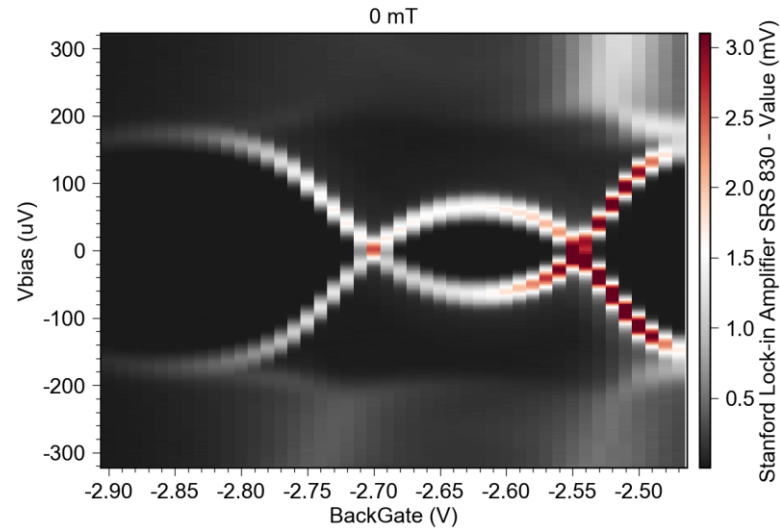


dev15_LOCKIN_exc10uV_freq8Hz_filter6dB_time300ms_sens20mVper
nA_waitingtime1_bgINT-
19,5V_BGextopen_varyingB_theta94_100M_lowRi

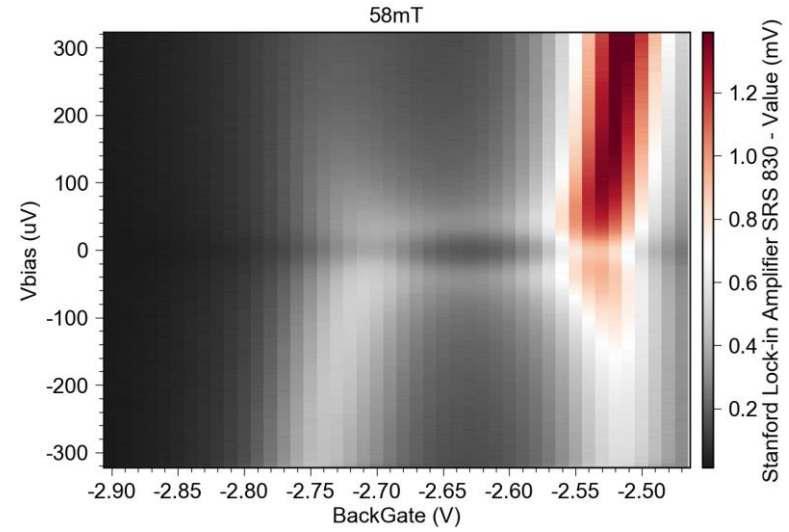
ABS1, device B

Device B

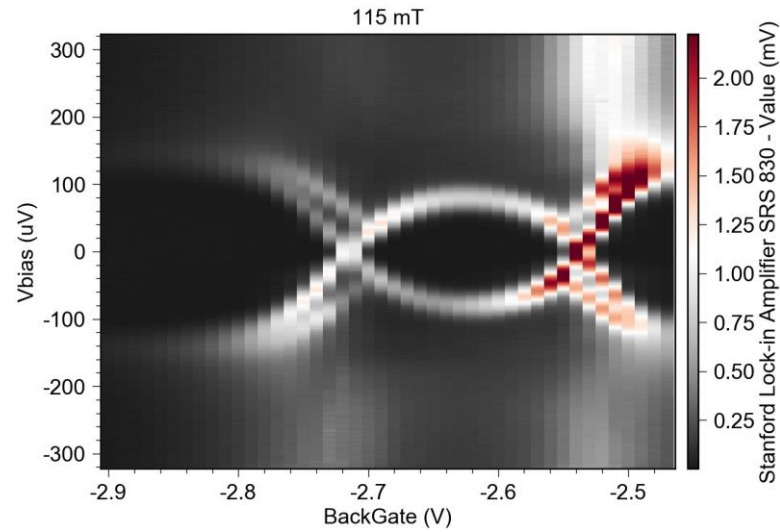
10 μV excitation, Backgate step 10 mV, bias step 2 μV



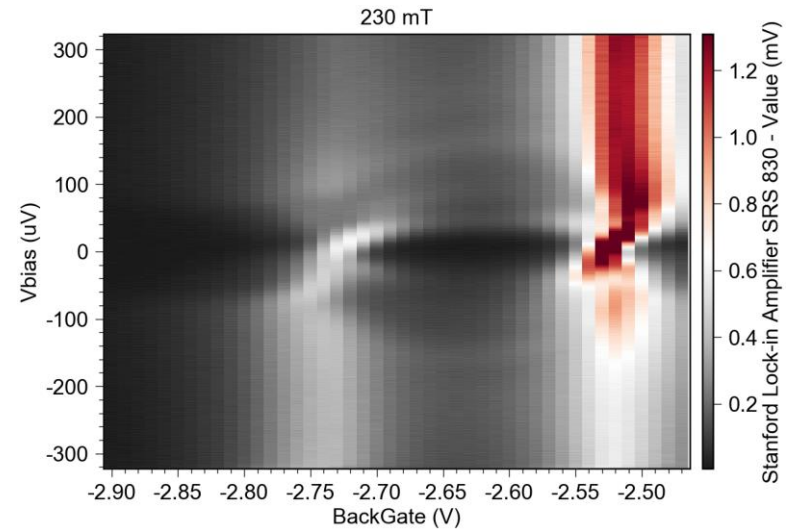
dev9_LOCKIN_VG_firstrange_zero_first_second



dev9_LOCKIN_VG_firstrange_destructive



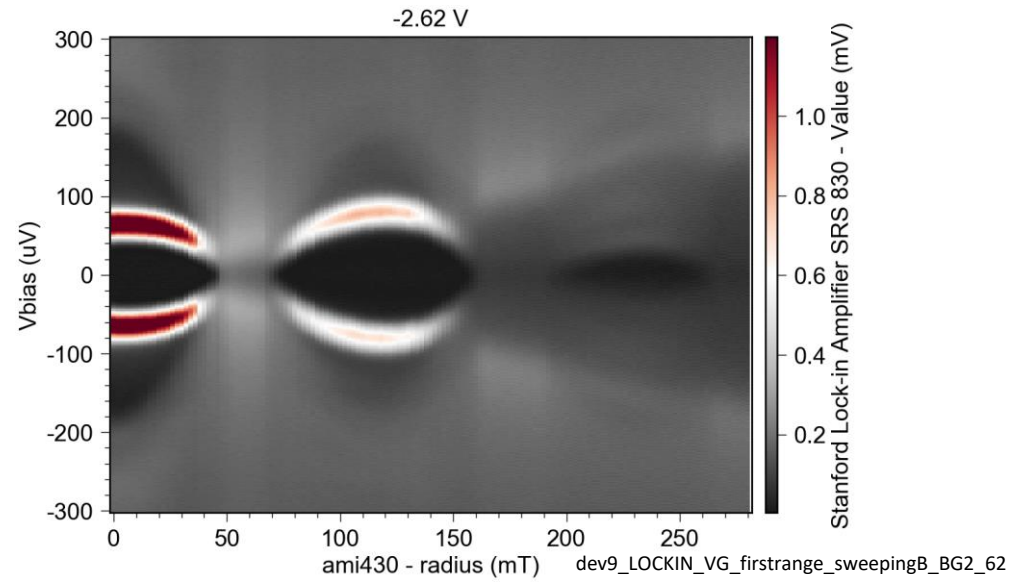
dev9_LOCKIN_VG_firstrange_zero_first_second



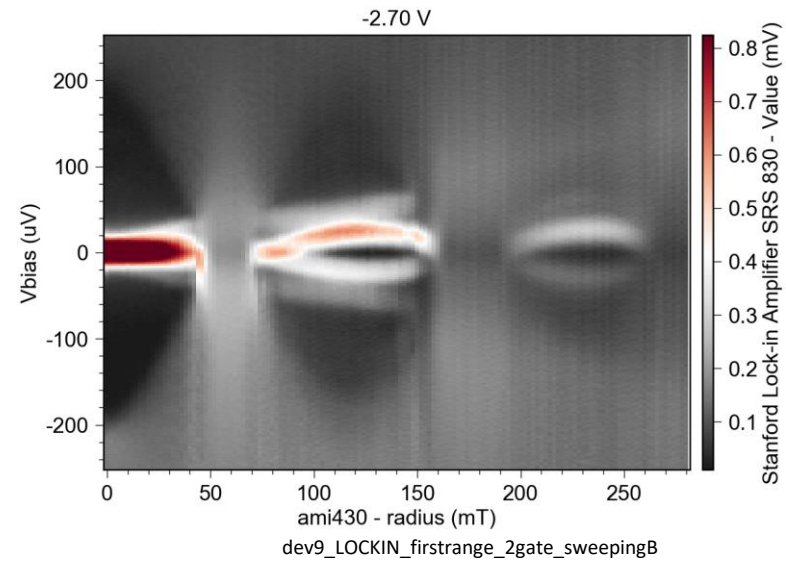
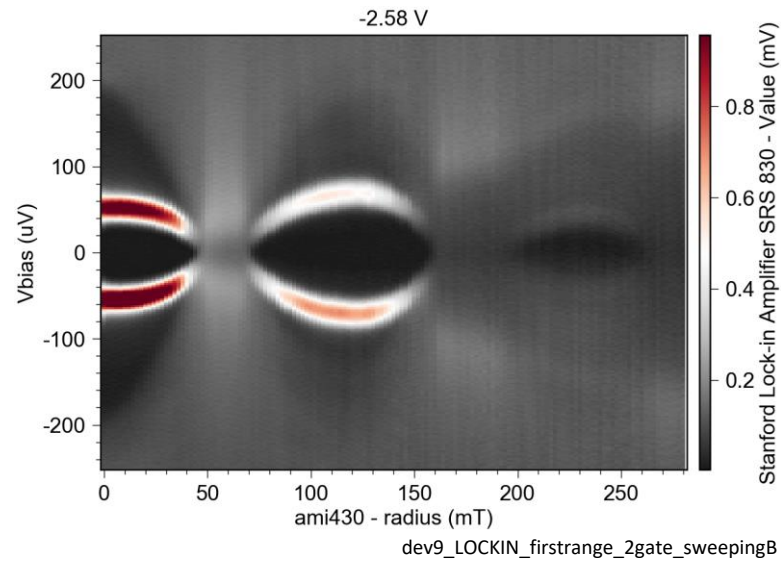
dev9_LOCKIN_VG_firstrange_zero_first_second

Also data at 36 mT and 86 mT: dev9_LOCKIN_firstrange_B36mT_86mT

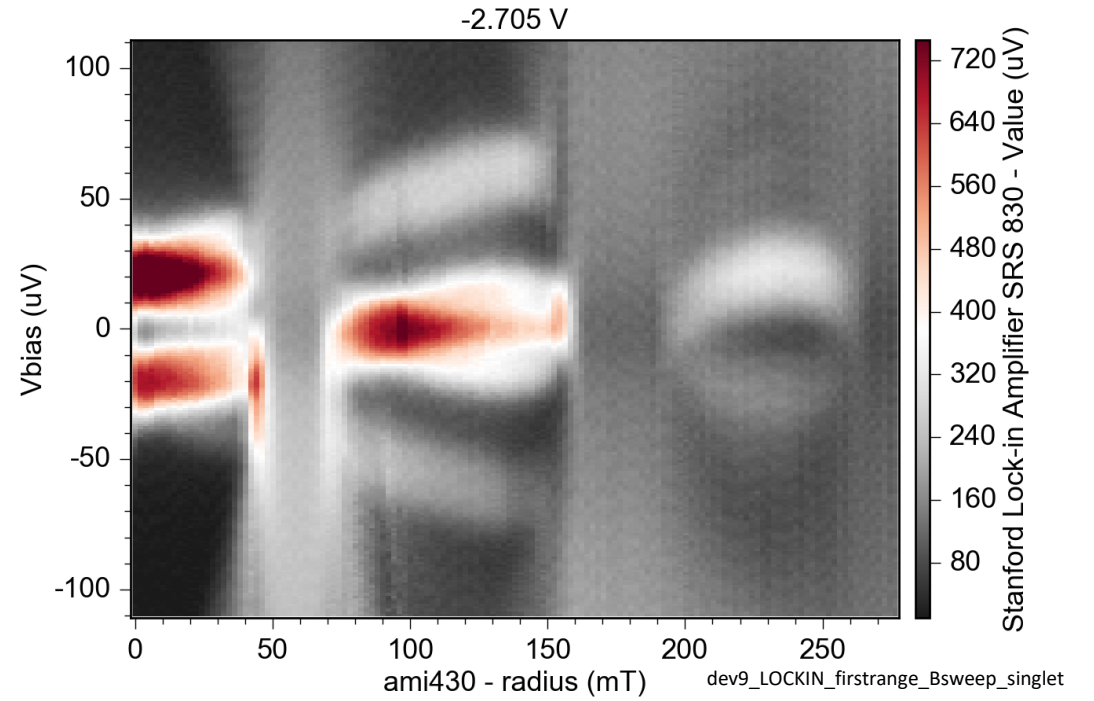
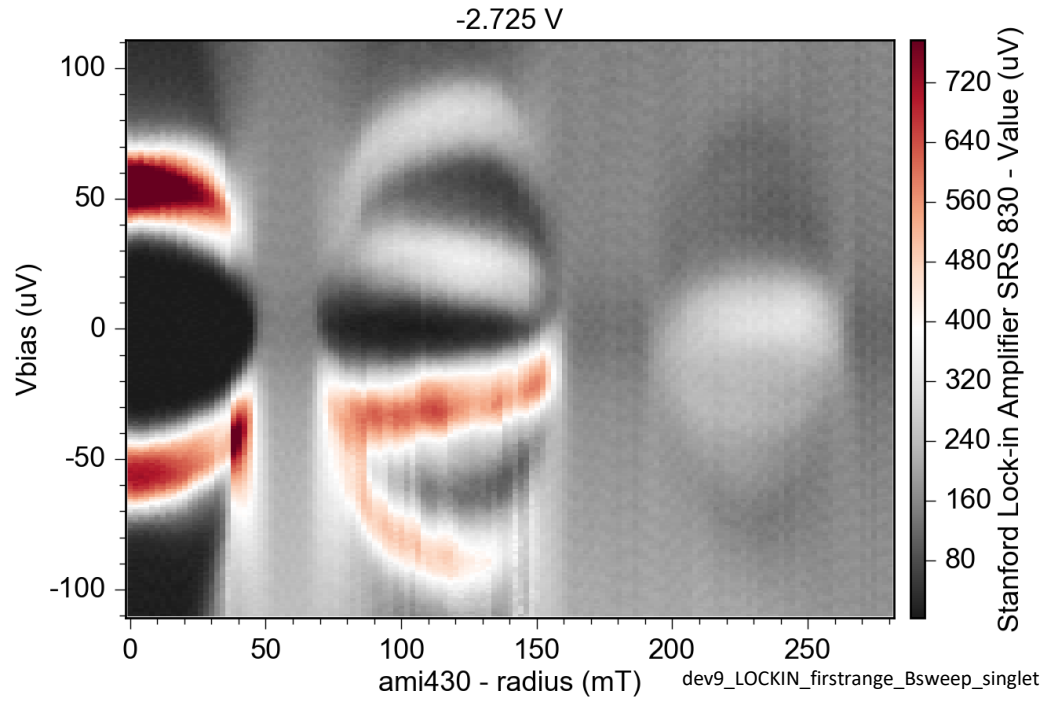
10 uV excitation, B step 2 mT, bias step 2 uV



5 uV excitation, B step 2 mT, bias step 2 uV



5 μV excitation, B step 2 mT, bias step 1 μV (zoom in the singlet GS)

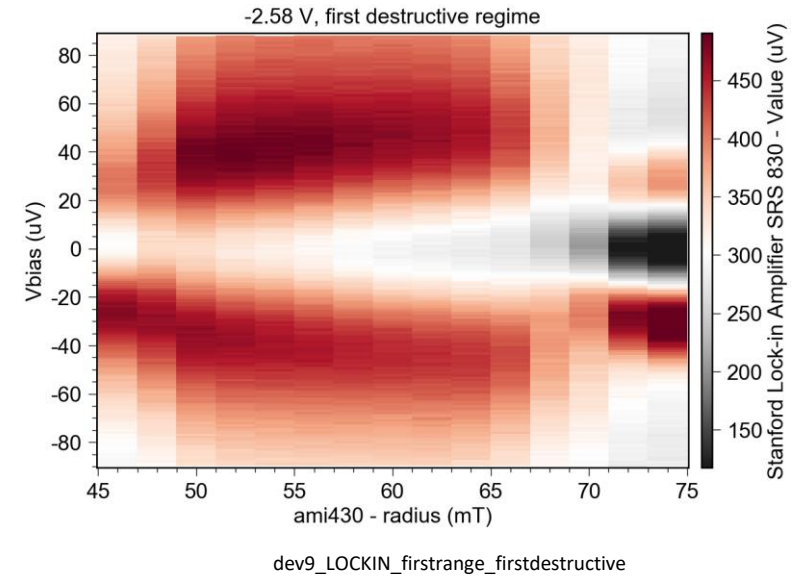
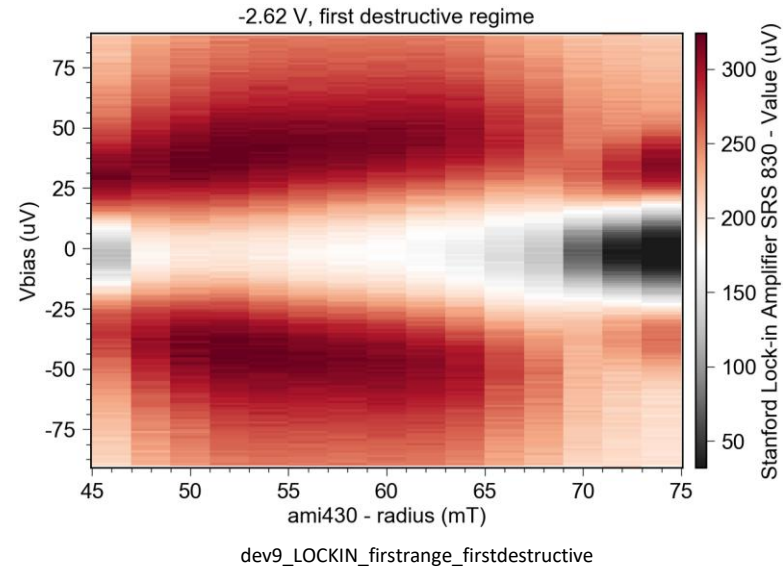
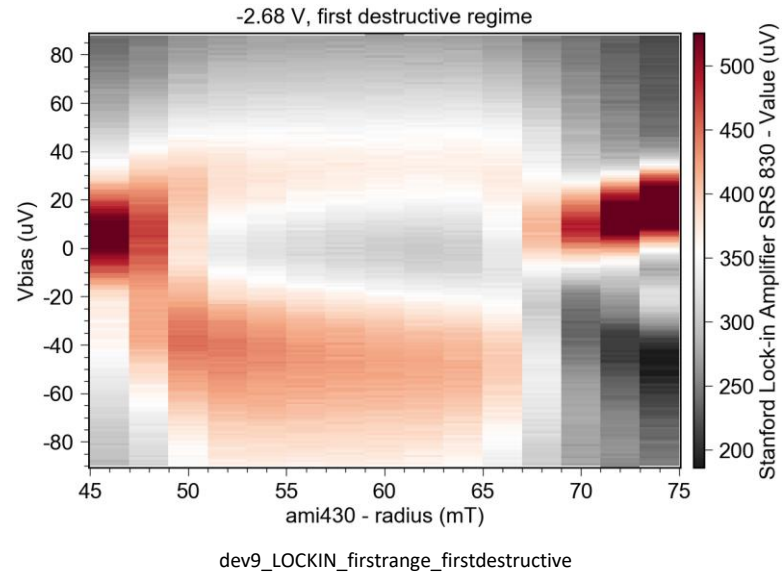


Similar data in: `dev9_LOCKIN_firstrange_Bsweep_singlet_biggerscan`

Focus in the first lobe: `dev9_LOCKIN_firstrange_Bsweep_singlet_focusfirstlobe`

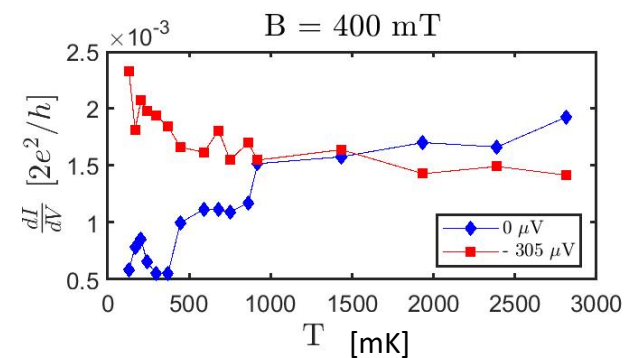
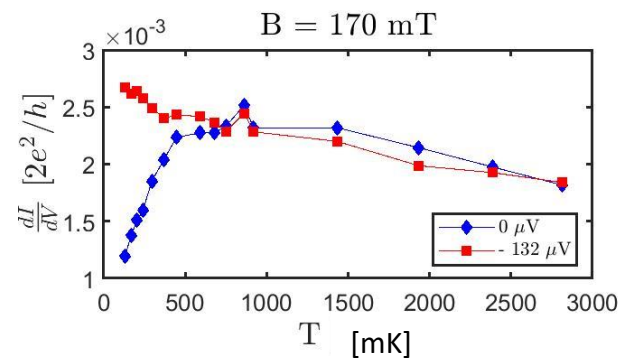
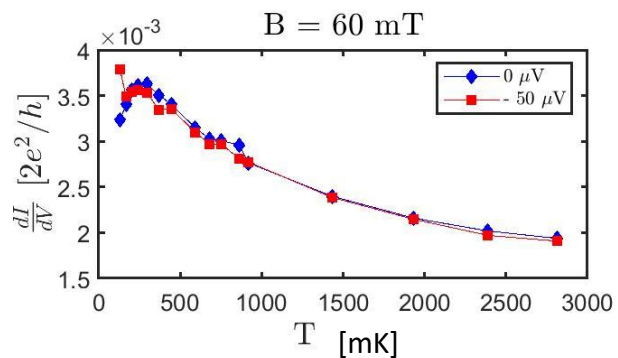
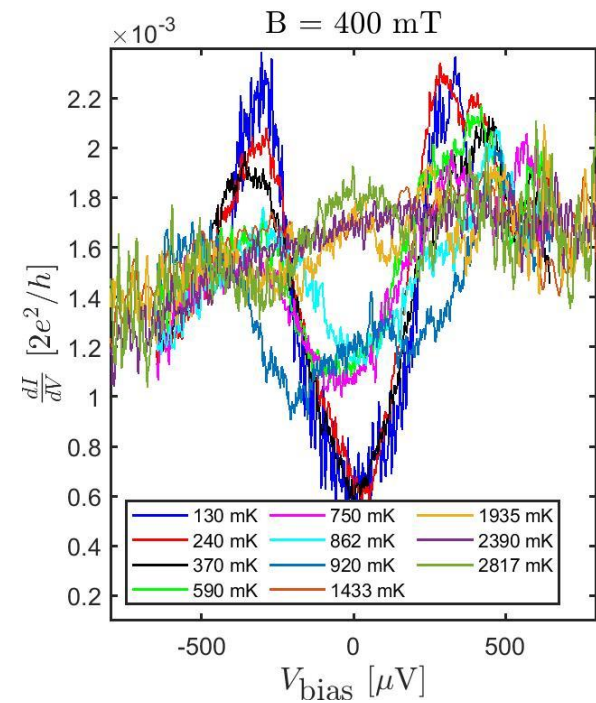
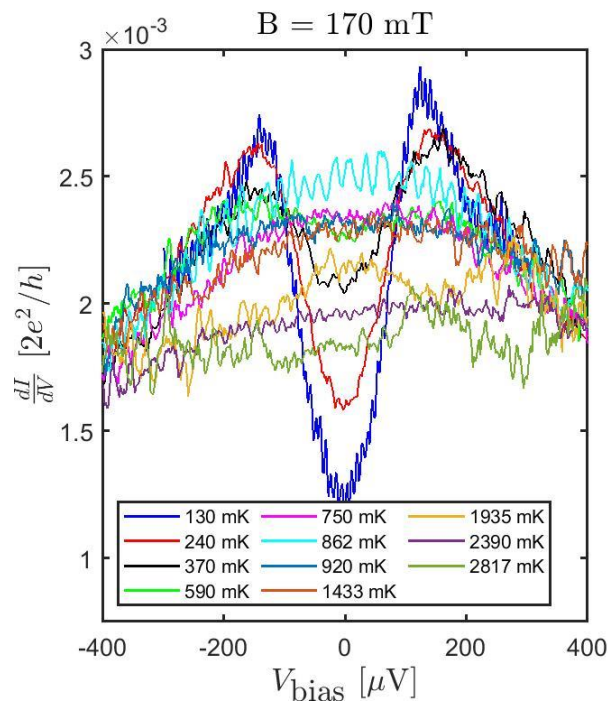
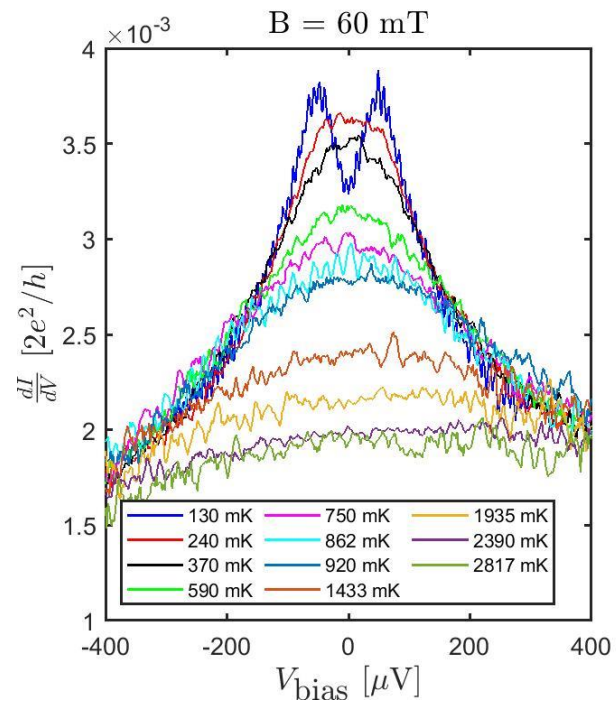
Analysis of Kondo peak for extracting g-factor

10 μV excitation, B step 2 mT, bias step 1 μV

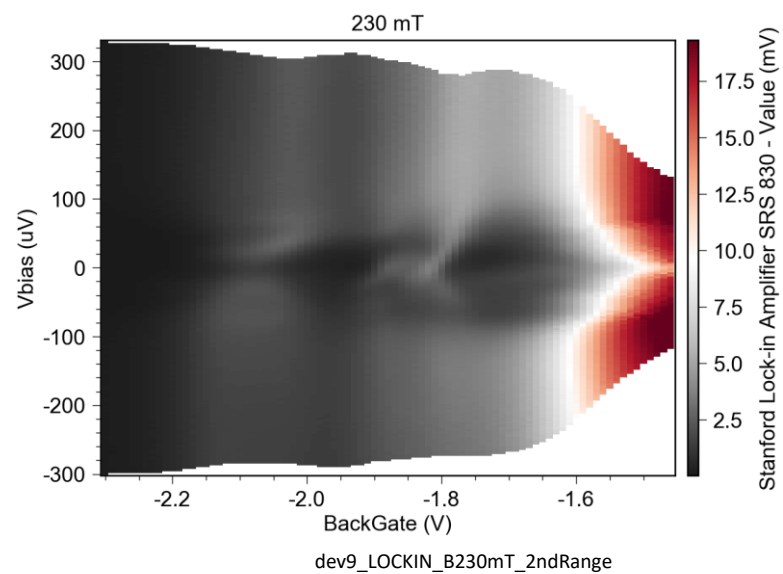
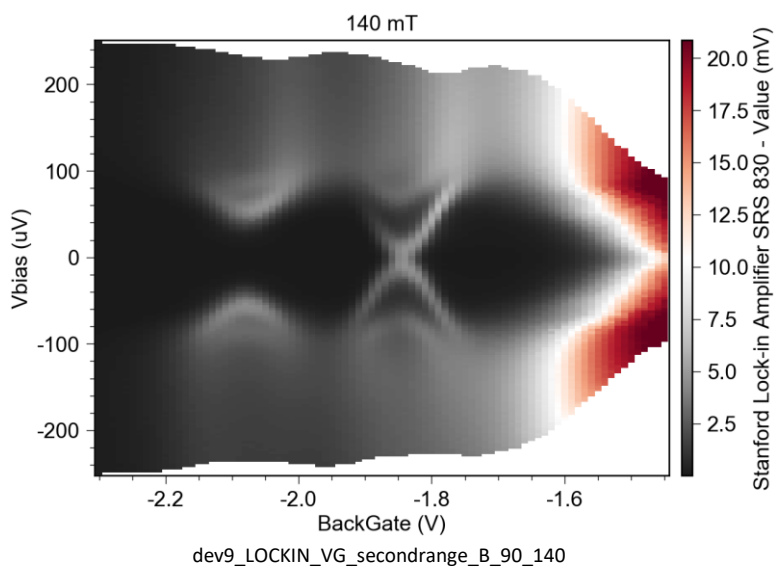
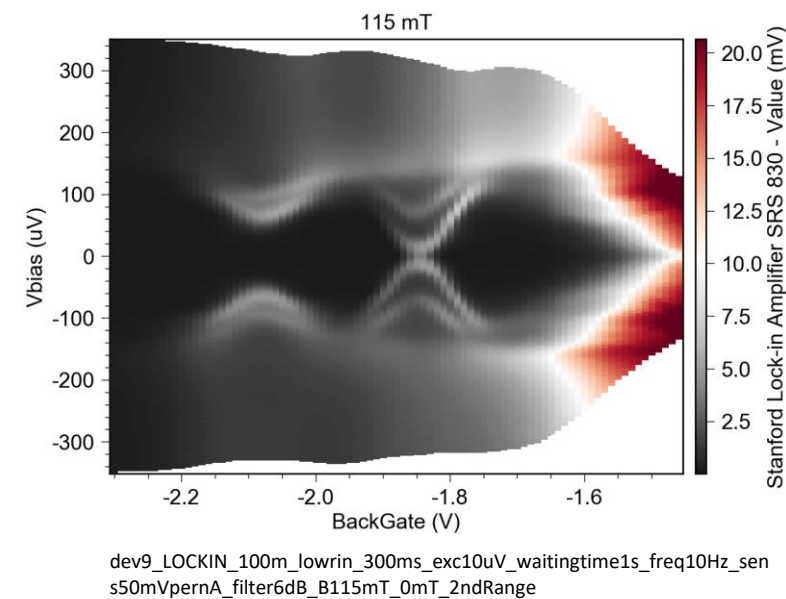
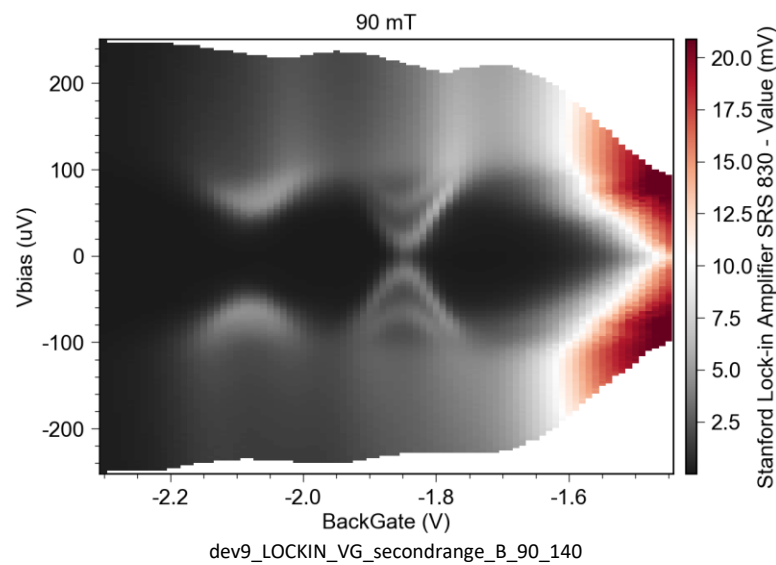
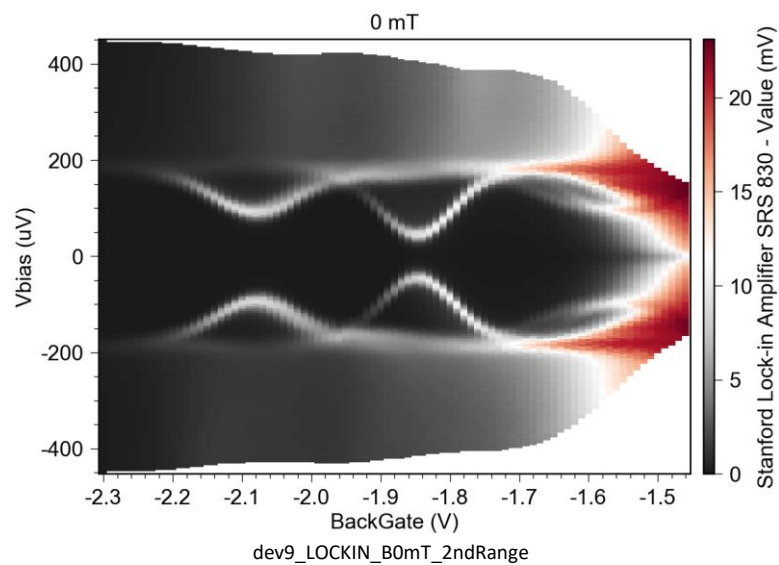


I have also Kondo data at higher fields: dev9_LOCKIN_firstrange2_62_seconddestructiveandlobe_toappend , dev9_LOCKIN_firstrange2_62_seconddestructiveandlobe_toappend2_biffernt stp , dev9_LOCKIN_firstrange2_62_seconddestructiveandlobe_toappend3_biffernt stp

Kondo, T dependence 5 μV excitation, bias step 2 μV



10 μV excitation, Backgate step 10 mV, bias step 2 μV

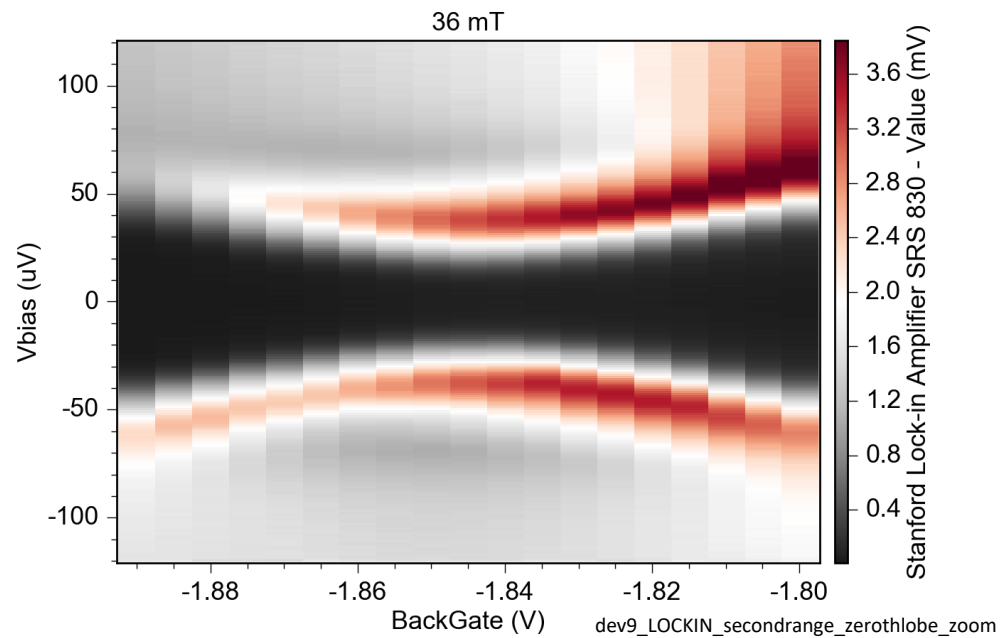
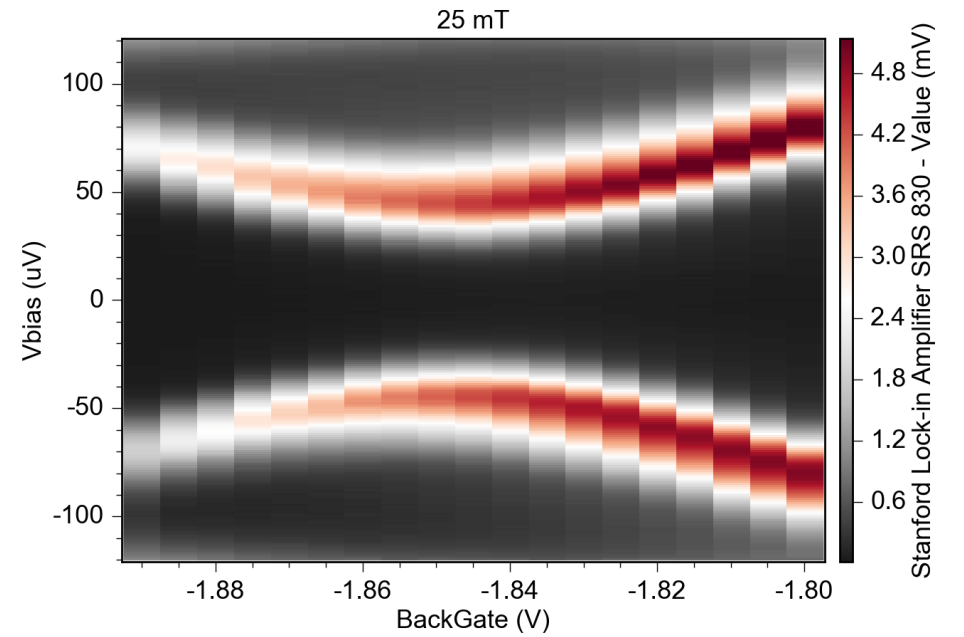
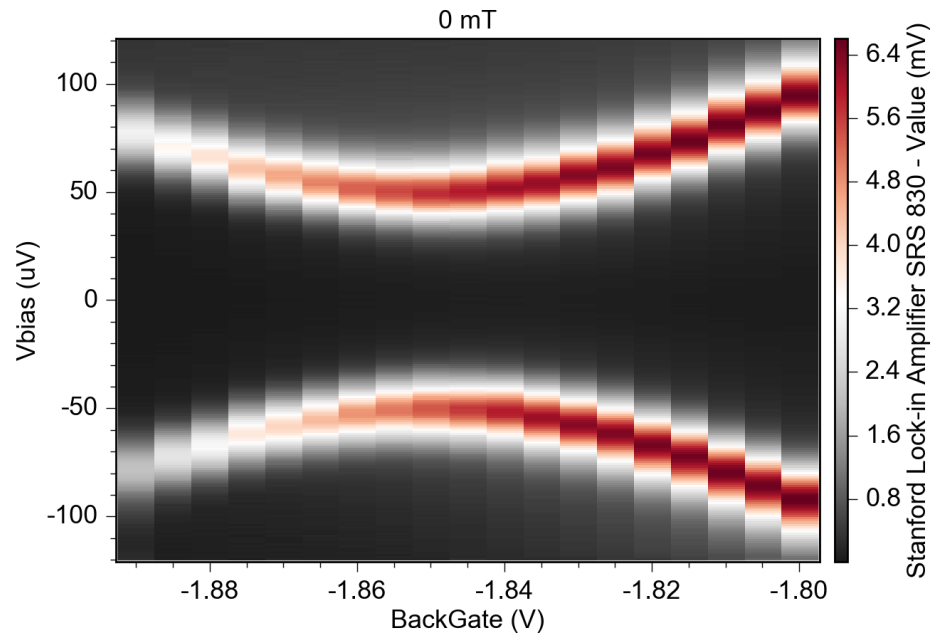


I also have 218 mT and 242 mT

dev9_LOCKIN_VG_secondrange_B_218_242

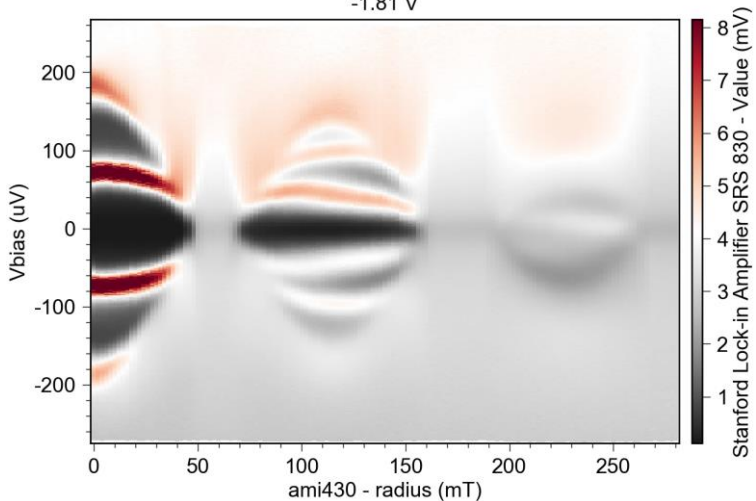
5 μV excitation, Backgate step 5 mV, bias step 1 μV

ZOOM



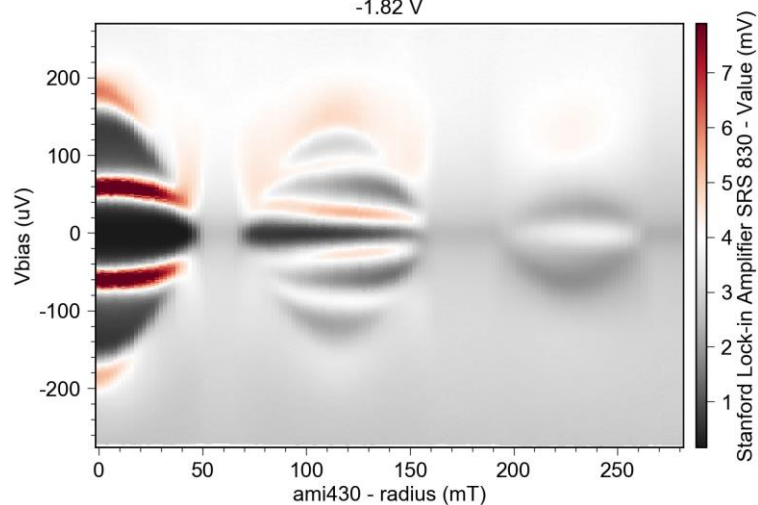
10 μV excitation, B step 2 mT, bias step 2 μV

-1.81 V



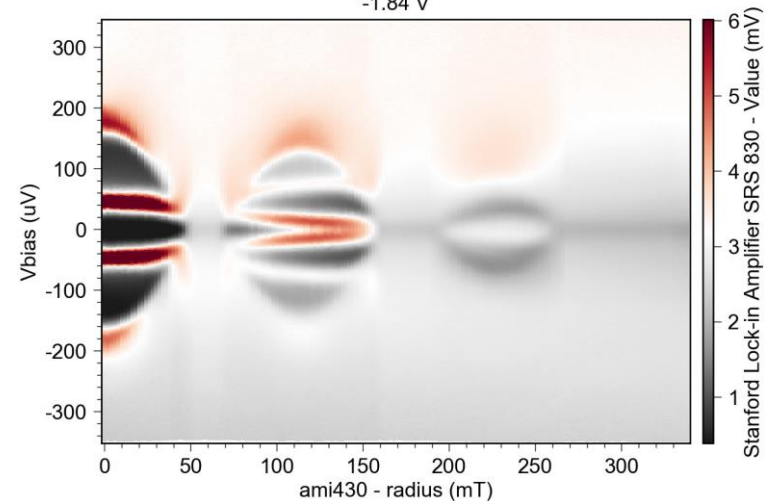
dev9_LOCKIN_VG_secondrange_sweepingB_differentBG

-1.82 V



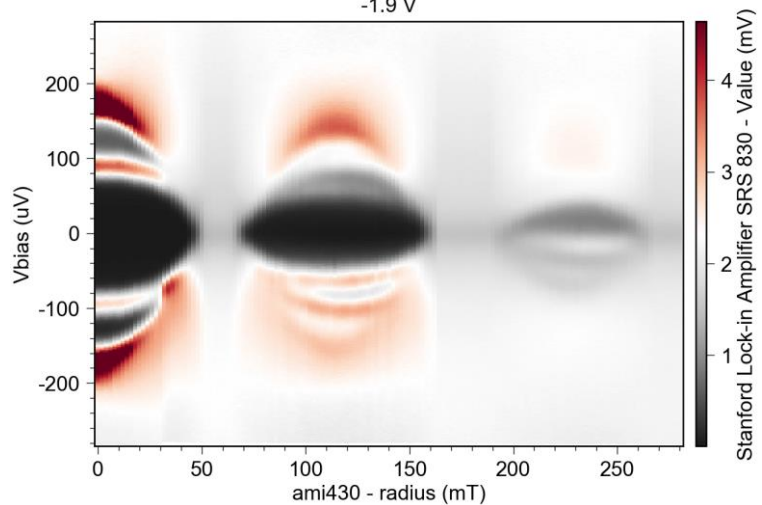
dev9_LOCKIN_VG_secondrange_sweepingB_BG1_82

-1.84 V



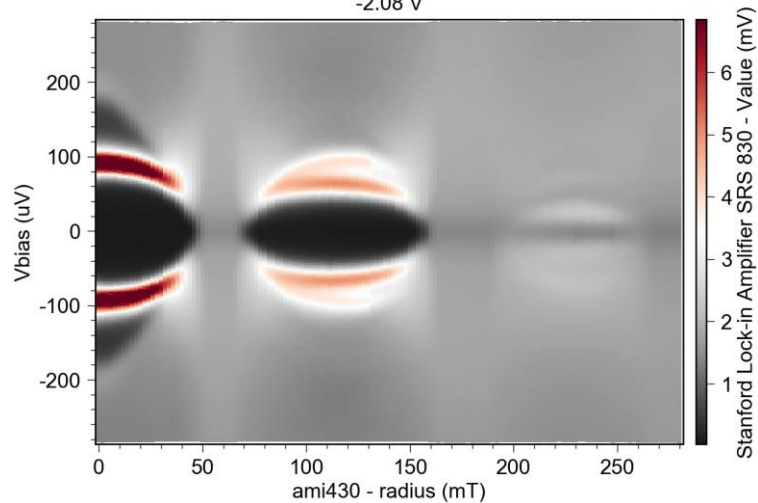
dev9_LOCKIN_VG1_84_sweepingB

-1.9 V



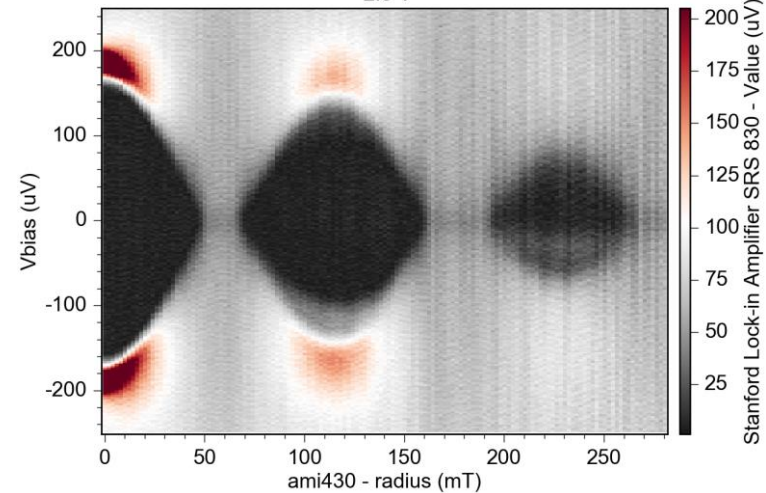
dev9_LOCKIN_VG_secondrange_sweepingB_differentBG

-2.08 V



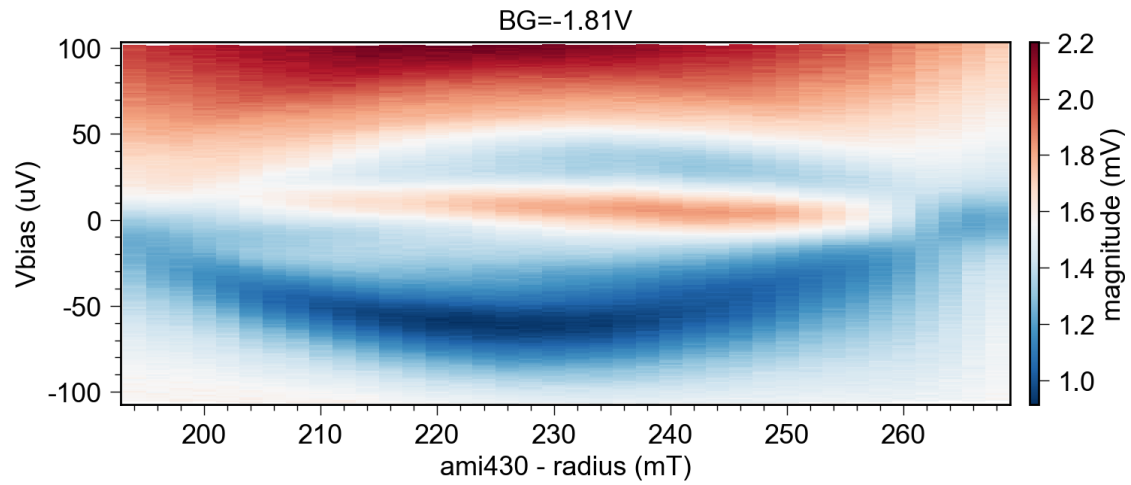
dev9_LOCKIN_VG_secondrange_sweepingB_differentBG

-2.3 V

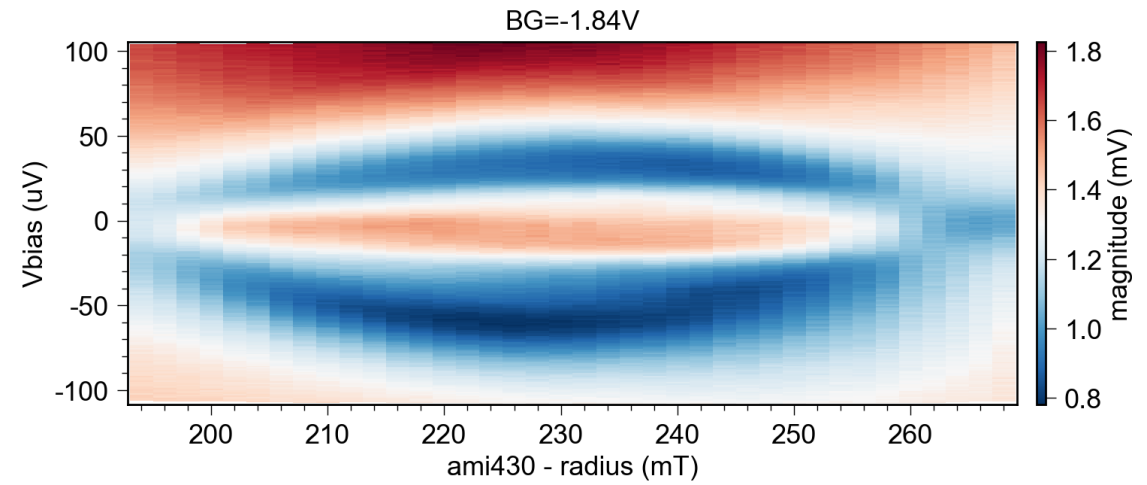


dev9_LOCKIN_secondrange_-2_3gate_sweepingB

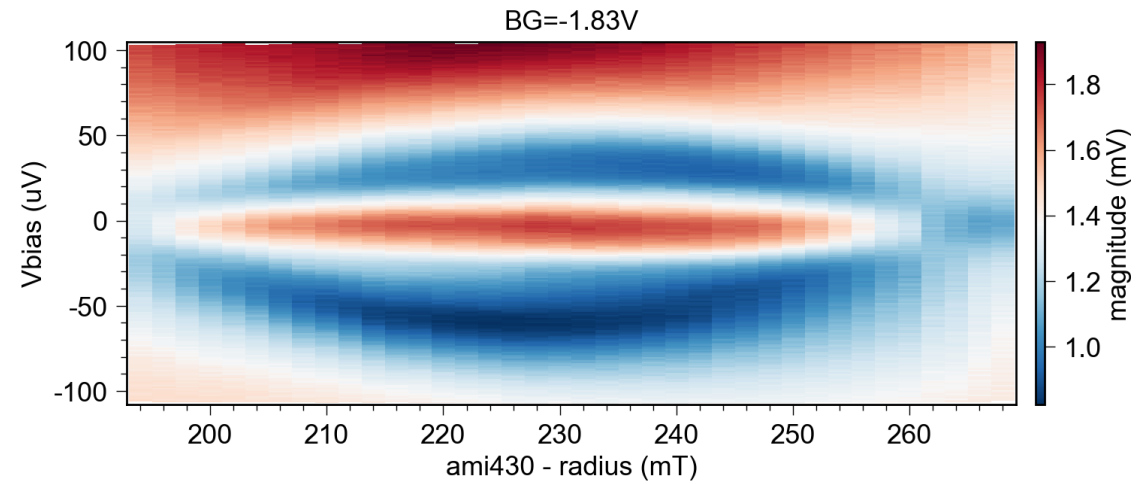
Zoom in the second lobe



dev9_LOCKIN_VG_secondrange_sweepingB_zoom_secondlobe_moreprecise

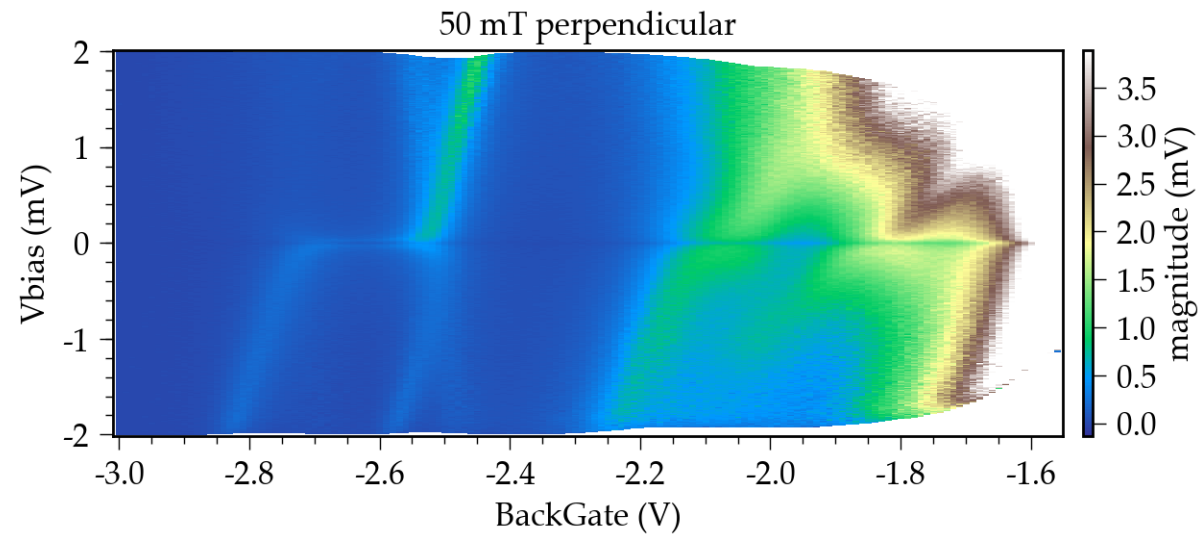


dev9_LOCKIN_VG_secondrange_sweepingB_zoom_secondlobe_moreprecise



dev9_LOCKIN_VG_secondrange_sweepingB_zoom_secondlobe_moreprecise

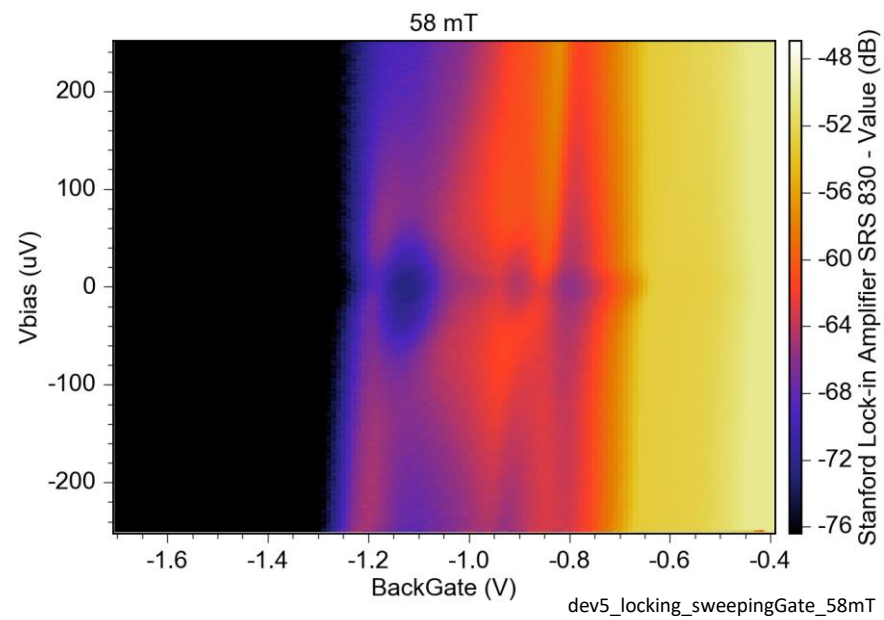
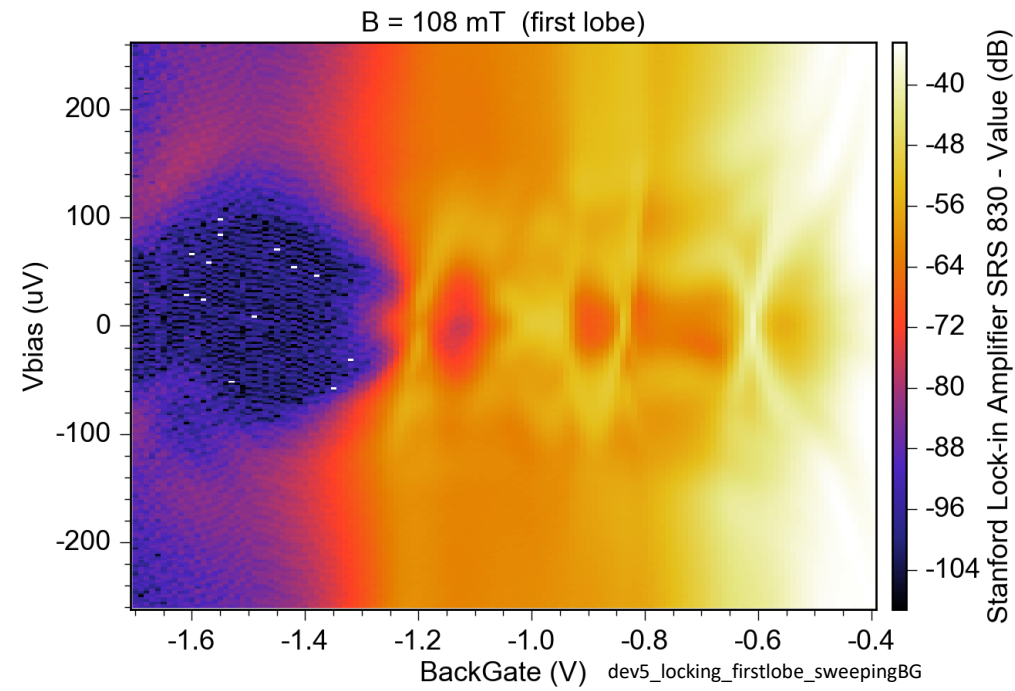
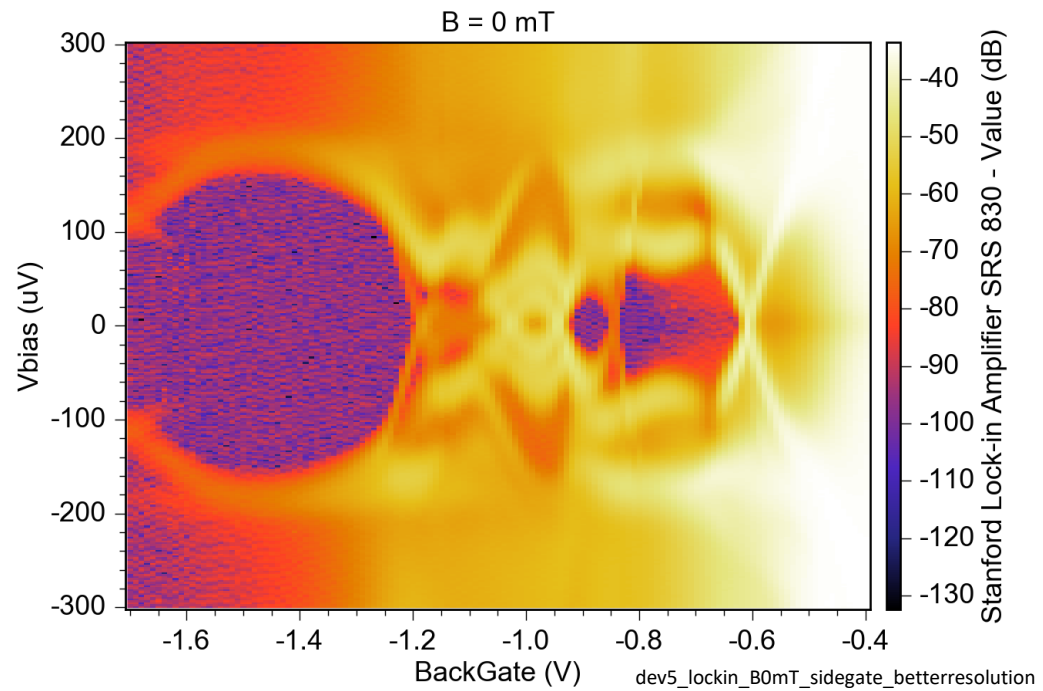
50 mT perpendicular

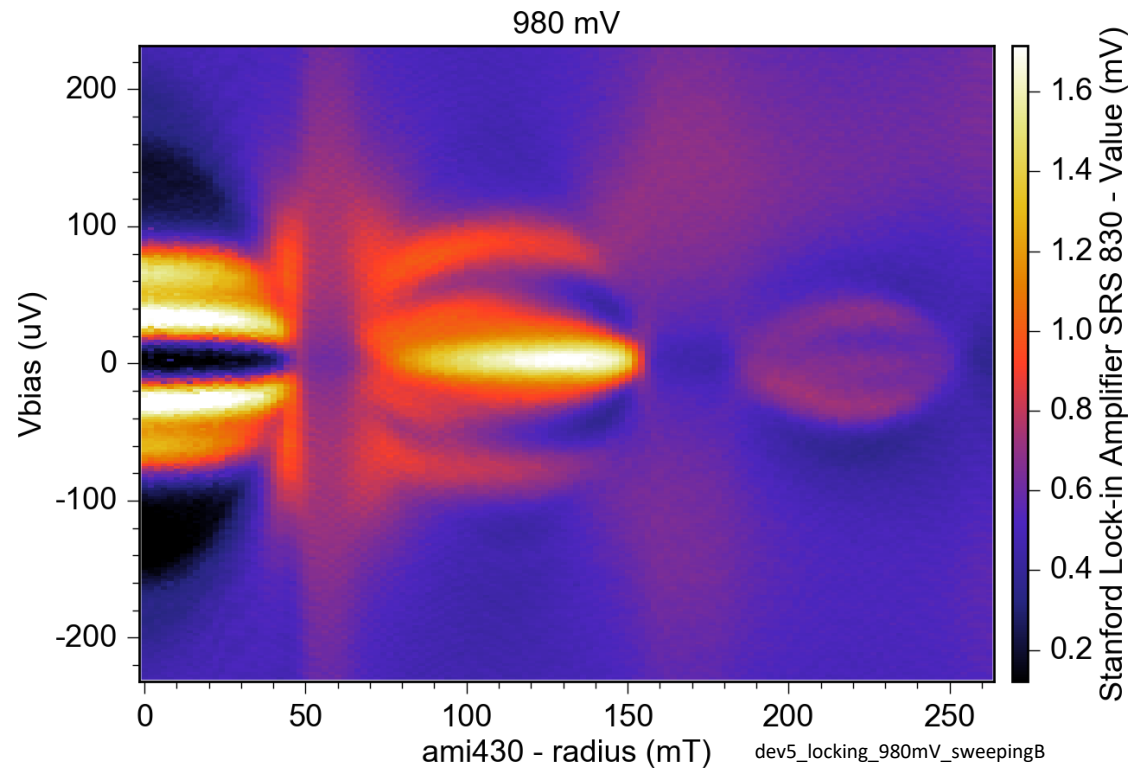
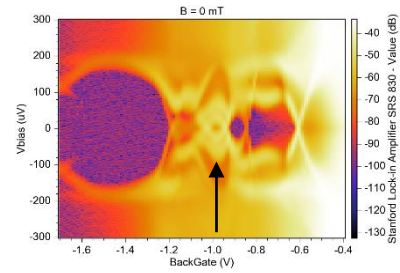


dev9_LOCKIN_overall_Bperp_lockinfast

ABS1_secondcooldown, Device D

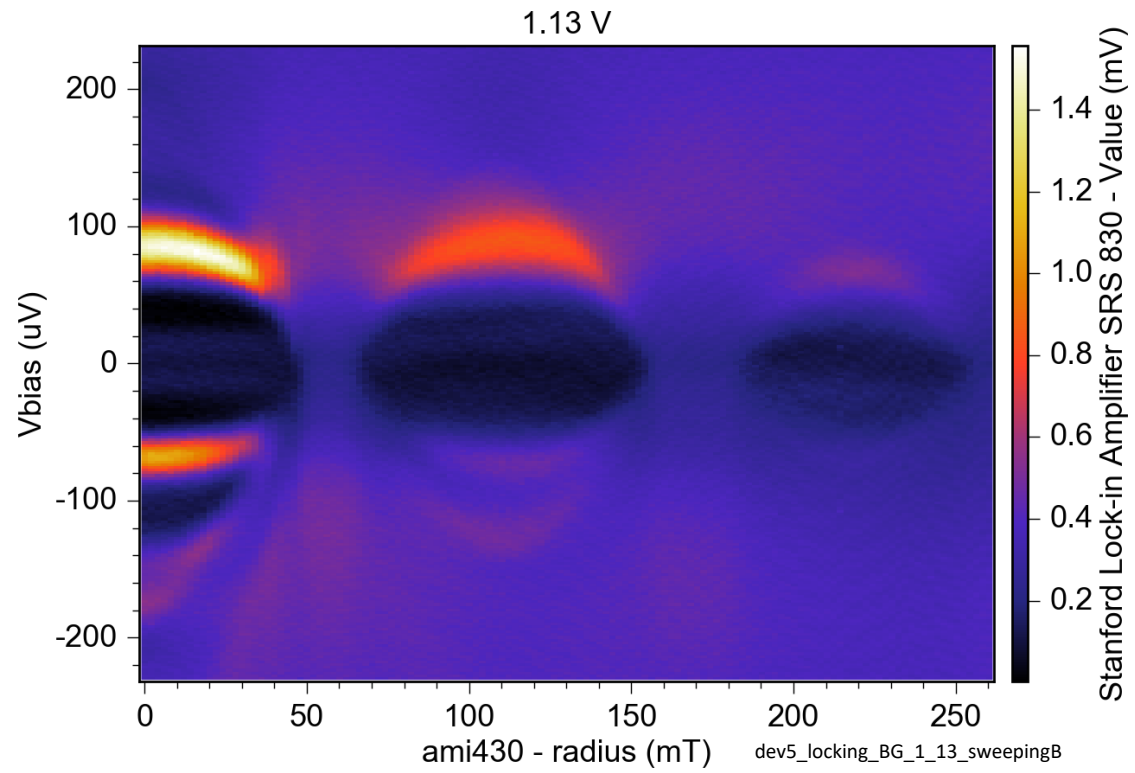
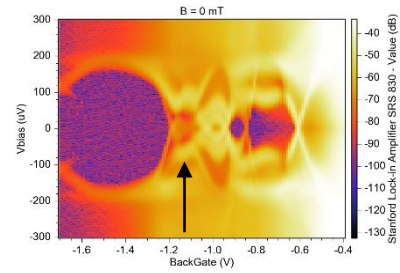
Device D

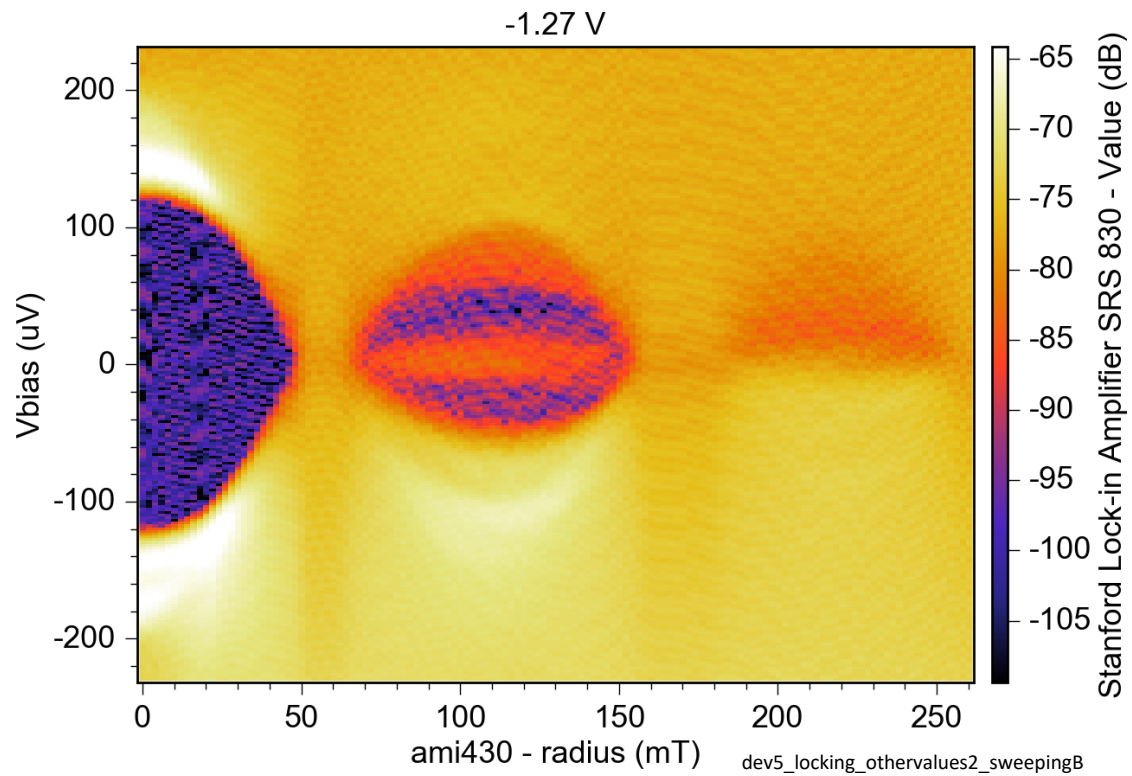
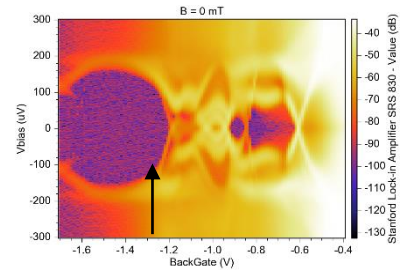




Same result for -1V and for -960 mV:

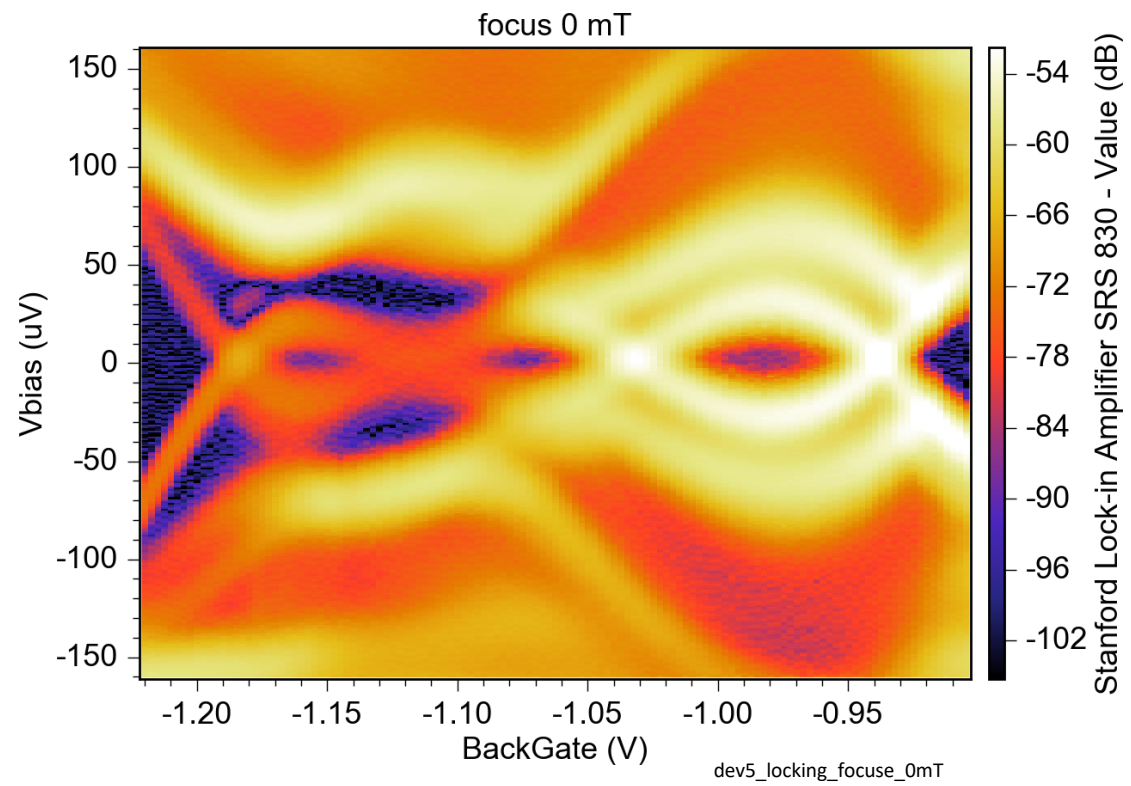
dev5_locking_othervalues_sweepingB

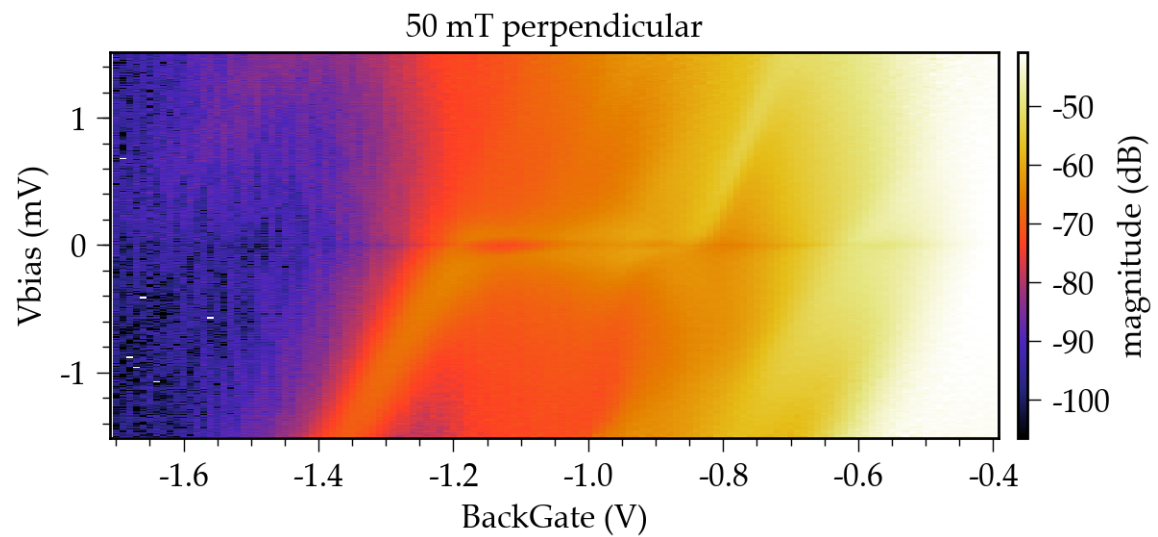




I have kondo temperature analysis at BG = -980 mV and at BG = -1.13V

From `dev5_locking_T_20mK_58mT_twobackgate` to `dev5_locking_T_177mK_58mT_twobackgate`





dev5_locking_sweepingGate_Bperp