Tuning algorithm for ACT SQUIDs

start

finish

1. Setting acq variables

setup all SQUIDs stages (i.e. 1ˢᵗ in a night) or only the coldest stages?

2 shortest / 1 short / 0 full

tuning type

Restore previously found bias and fb

MCE settings: data_rate, data_mode, servo_mode, row_len, sample_num, sample_dly, num_rows

reset MCE (clear)

clear FIFO | check MCE reset | check one behind | health clear

health check

scheduler

293K

2. ramp SSA

servo_mode=1
data_mode=0

4X

ramp the SSA bias and the SSA fb and acquire the error signal

ramp SSA bias n fb

yes

find SSA bias?

no

set SSA bias ······ SSA bias

ramp the SSA fb and acquire the error signal

ramp SSA fb

4X

set the SSA bias corresponding to the maximum peak to peak

find the SSA fb corresponding to the mid point in the slope

4K

servo_mode=1
data_mode=0

set the offsets to center the SSA V-phi curves around zero. The ADC offset choice is performed on column basis

293K

3. SQ2 servo

servo_mode=1
data_mode=0

set SQ2 bias ······ SQ2 bias

SSA fb initial values

ramp the SQ2 fb adjust the SSA fb in order to have zero output

SQ2 servo

32X

find the SQ2 fb corresponding to the mid point in the slope

set the SSA fb corresponding to the mid point in the slope

set SQ1 bias ······ SQ1 bias

4. SQ1 servo

32X

SQ2 fb initial values

ramp the SQ1 fb adjust the SQ2 fb in order to have zero output. Each SQ2 column servos 1 selected row

SQ1 servo

selected rows

set the SQ2 fb corresponding to the mid point in the slope

5. ramp SQ1 fb

ramp the SQ1 fb in open loop acquiring the error output

ramp SQ1 fb

1056X

300mK

servo_mode=1
data_mode=0

set the offsets to center the system response around zero. The ADC offset choice is performed on pixel basis

293K

6. frame test

servo_mode=3
data_mode=4

In dada_mode 4 and servo_mode 3 acquire some frames to check that the locking is successful

frame test

flag pixels with error average bigger than their standard deviation

IV curves

300mK