

BCM Calibration

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&

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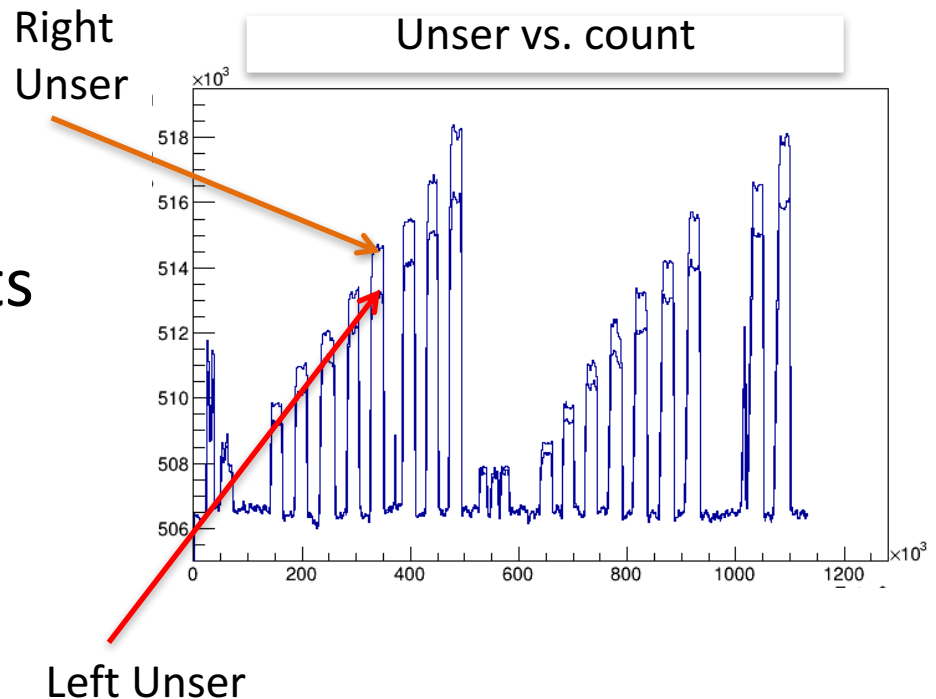
3/21/17

General Info

- BCM calibration on 2/27/17
 - Run# : 630
 - MCC limited the current to 25 μA
 - Hoped to reach at least 30 μA
- Covered a current range
 - (3 – 25) μA
- MCC had some trouble delivering lower current for 90 seconds
- ~~• Additional calibration was planned at higher currents
 - Invasive calibration using Faraday cup~~

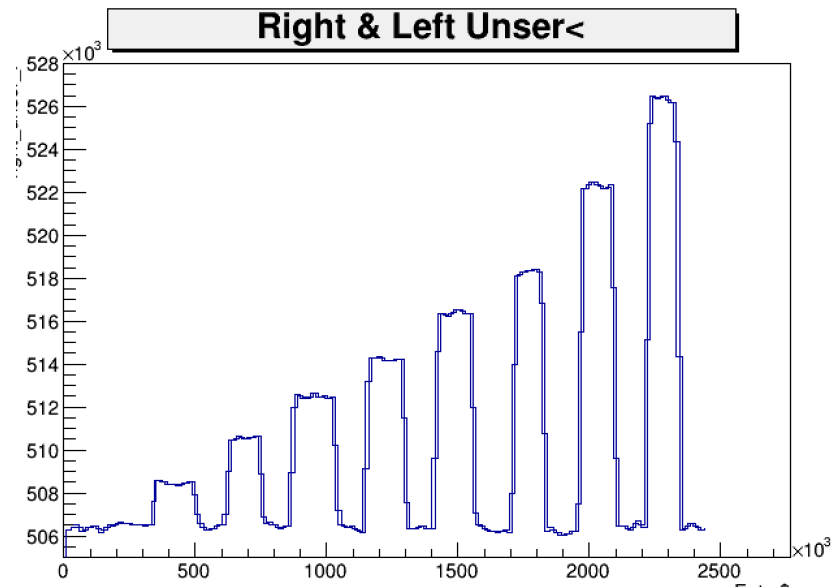
Unser Issue

- Unser signal is set to both LHRS and RHRS
- Shujie noticed a large discrepancy between RHRS calib. Coefficients & DVCS / G_M^p
- Not present in DVCS / G_M^p



Unser continued

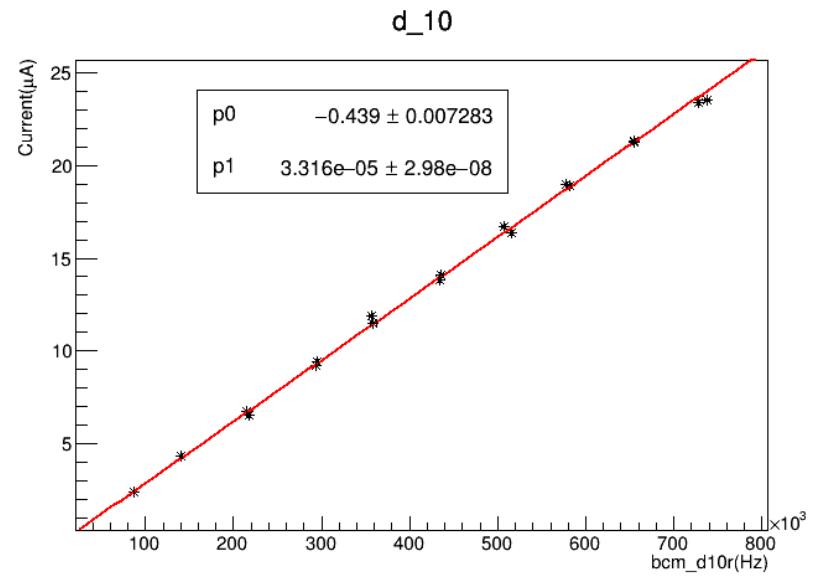
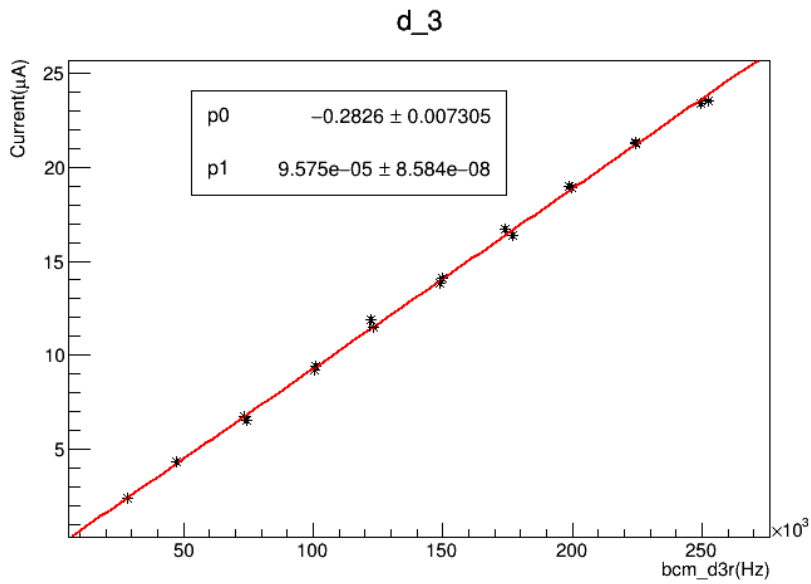
- Unser behavior not seen before start of experiment in Unser Calibration
- Alex thought it could be due to cross talk
- Checked during an access
 - No obvious issue
- Data no longer shows right vs. left Unser discrepancy
 - Loose cable?

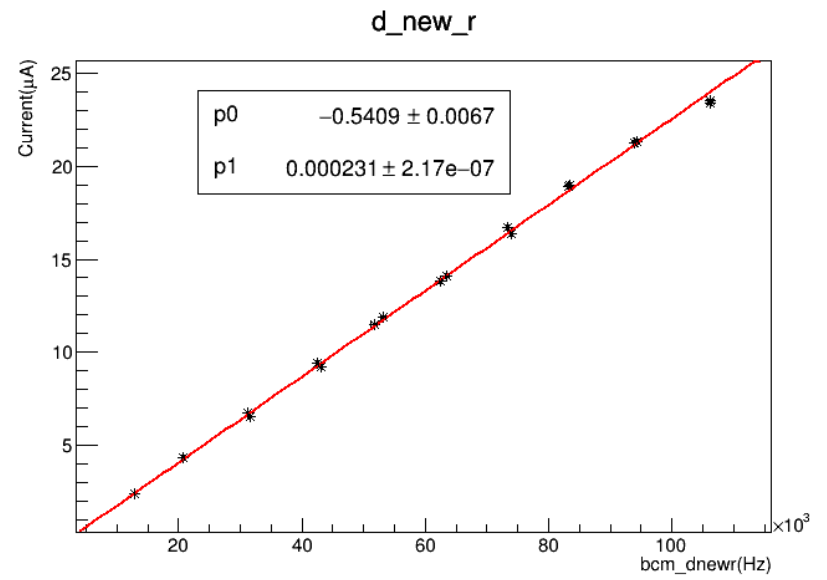
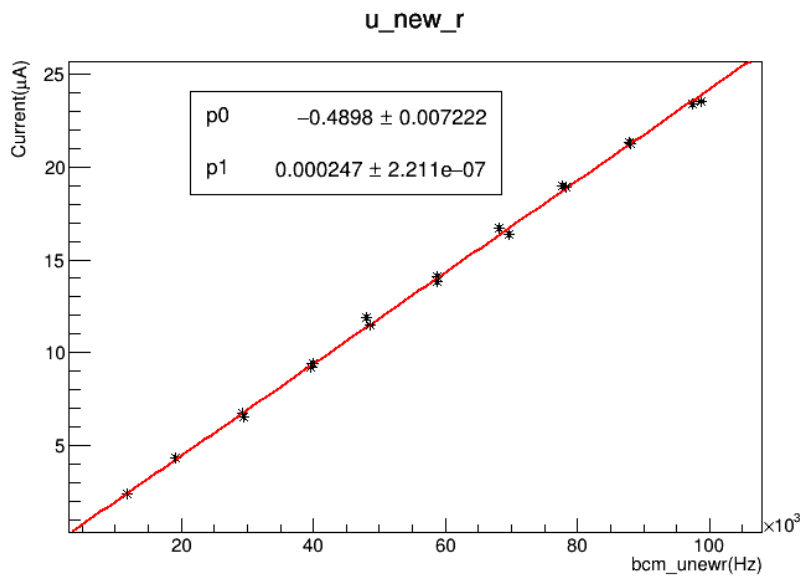


BCM calibration

- Performed using LHRS scalers
- Concerns along the way:
 - Boiling study
 - Calibrating to lower current $\sim 3 \mu\text{A}$ ($2.5 \mu\text{A}$)
 - When do the receivers go non-linear?
- Calibration coefficients
 - Gains are comparable to the past
 - Offsets seem to have changed

Results





Comparison to previous coefficients

Argon

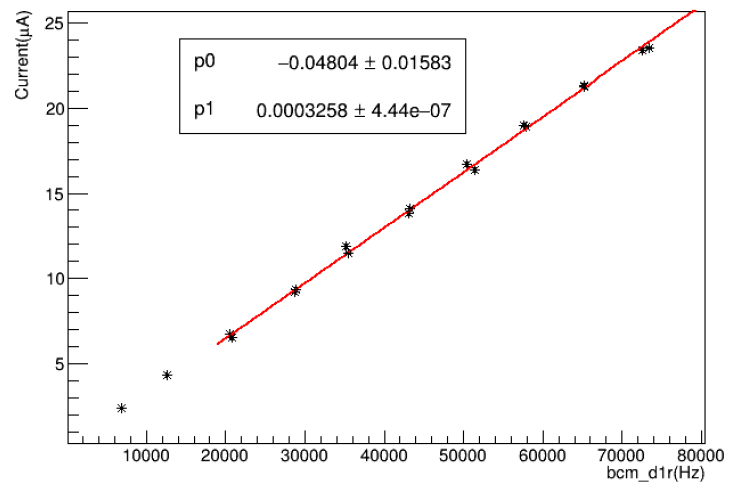
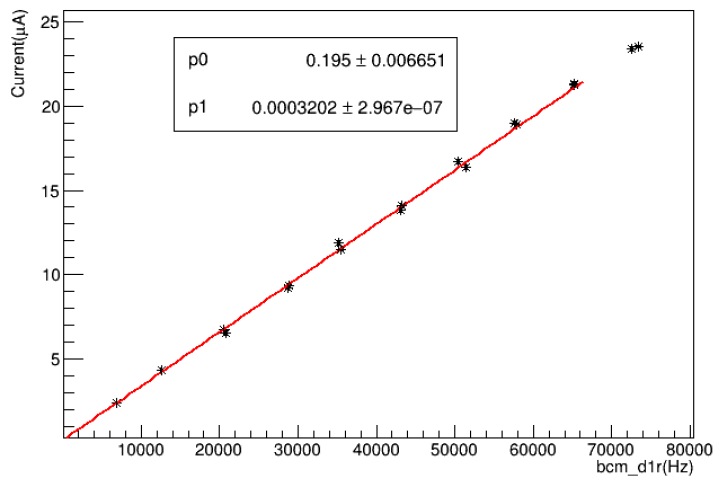
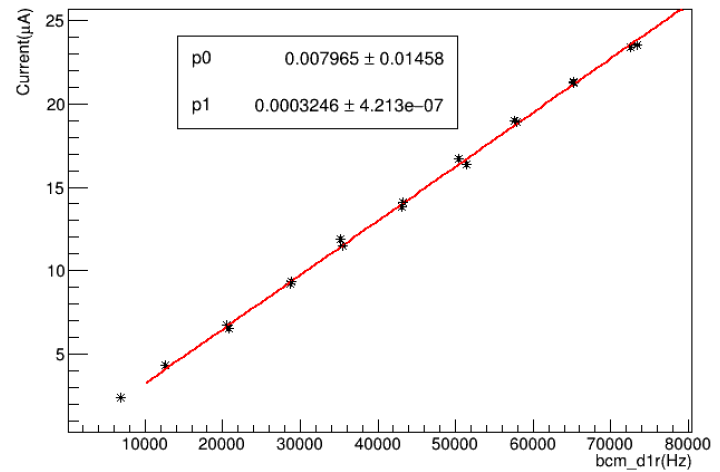
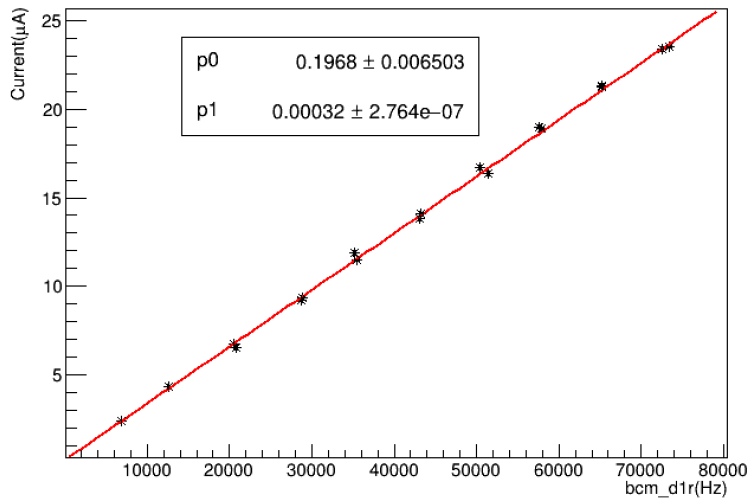
Receiver	Gain (p1)	Offset (p0)
u1r	3.70 e-4	0.451
d1r	3.25 e-4	0.0145
d3r	9.57e-6	-0.283
d10r	3.32 e-4	-0.439
dnewr	2.30 e-4	-0.541
unewr	2.47 e-4	-0.489

DVCS : LHRS

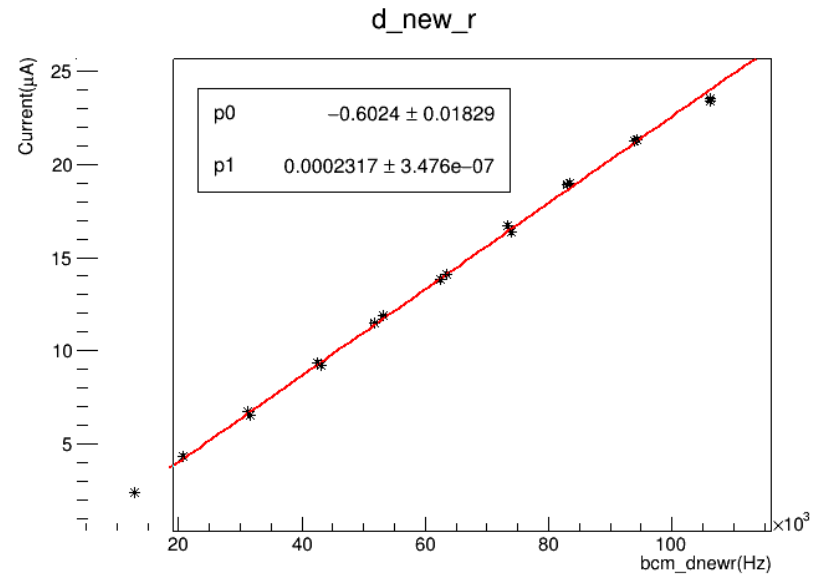
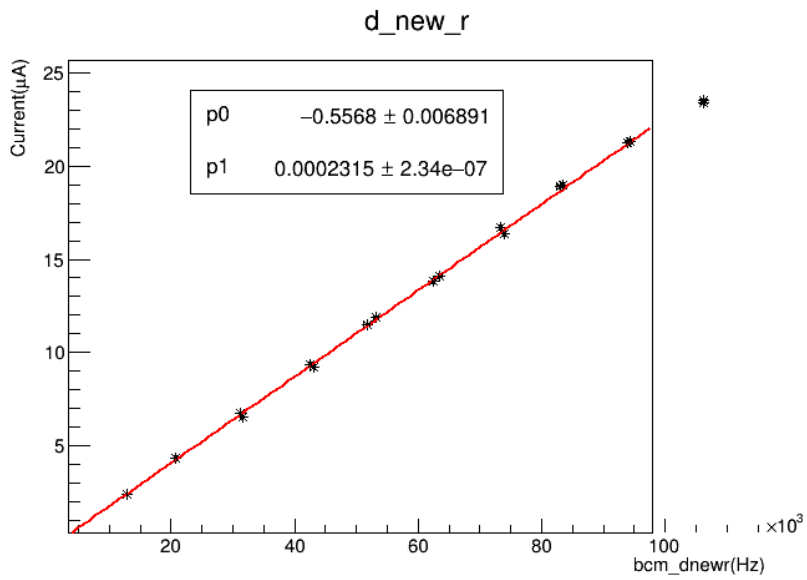
Receiver	Gain (p1)	Offset (p0)
u1r	3.84 e-4	1.04
d1r	3.29 e-4	0.47
d3r	9.55 e-6	0.35
d10r	3.29 e-4	0.13
dnewr	2.15 e-4	0.15
unewr	2.54.5	0.13

Note : Our u1r & d1r fits do not include currents below 5 μ A

Linearity of d1r



dnewr



Previous Comparison

BCM Calibration run 22476

April 2016

Receiver	Gain (p1)	Offset (p0)	Receiver	Gain (p1)	Offset (p0)
u1r	349.1e-6 +/- 1.3+/e-6	0.66 +/- 0.15	u1r	348.7e-6 +/- 0.96+/e-6	0.65 +/- 0.11
d1r	319.1e-6+/- 1.1 +/ e-6	0.18 +/- 0.13	d1r	319.1e-6 +/- 0.88+/e-6	0.19 +/- 0.11
d3r	92.9e-6 +/- .30e-6	0.17 +/- 0.12	d3r	92.7e-6 +/- 0.22+/e-6	0.19 +/- 0.09
d10r	31.4e-6 +/- .29e-6	0.27 +/- 0.13	d10r	31.4e-6 +/- 0.28+/e-6	0.28 +/- 0.14

BCM Calibration run 22790

October 2016

Receiver	Gain (p1)	Offset (p0)	Receiver	Gain (p1)	Offset (p0)
u1r	383.6e-6 +/- 1.1e-6	1.05 +/- 0.10	u1r	383.2e-6 +/- 0.9e-6	1.04 +/- 0.09
d1r	328.0 e-6 +/- 1.03e-6	0.51 +/- 0.12	d1r	328 e-6 +/- 0.77e-6	0.47 +/- 0.09
d3r	95.8e-06 +/- 0.27e-6	0.27 +/- 0.08	d3r	95.49e-6 +/- 0.18e-6	0.35 +/- 0.07
d10r	330.2e-6 +/- 0.25e+/-e-6	0.15 +/- 0.12	d10r	331.8e-6 +/- 0.27e+/-e-6	0.15 +/- 0.11