More Wirescanner Results

Simulations

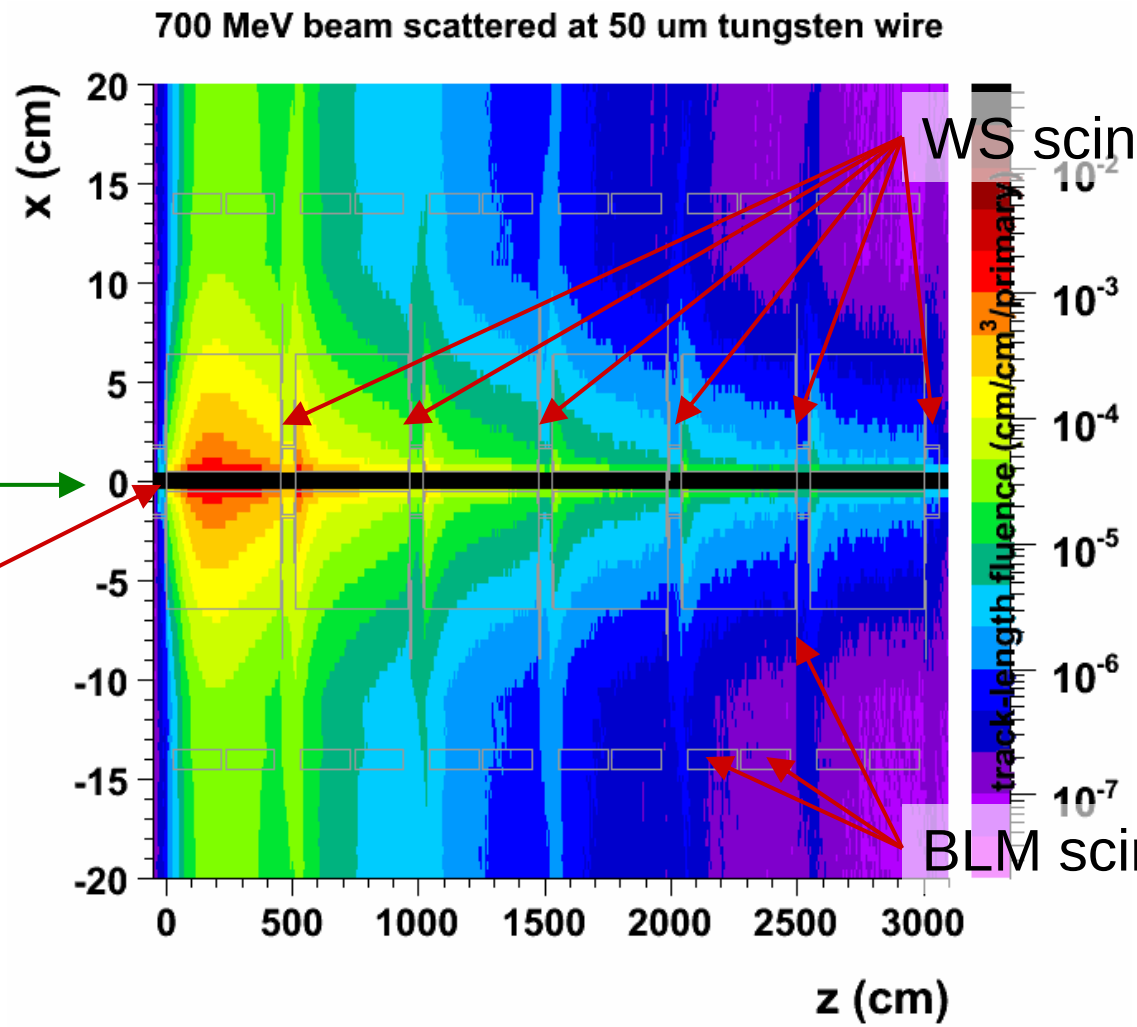
- Development of the e.m. cascade
- Expected energy deposition

Measurements

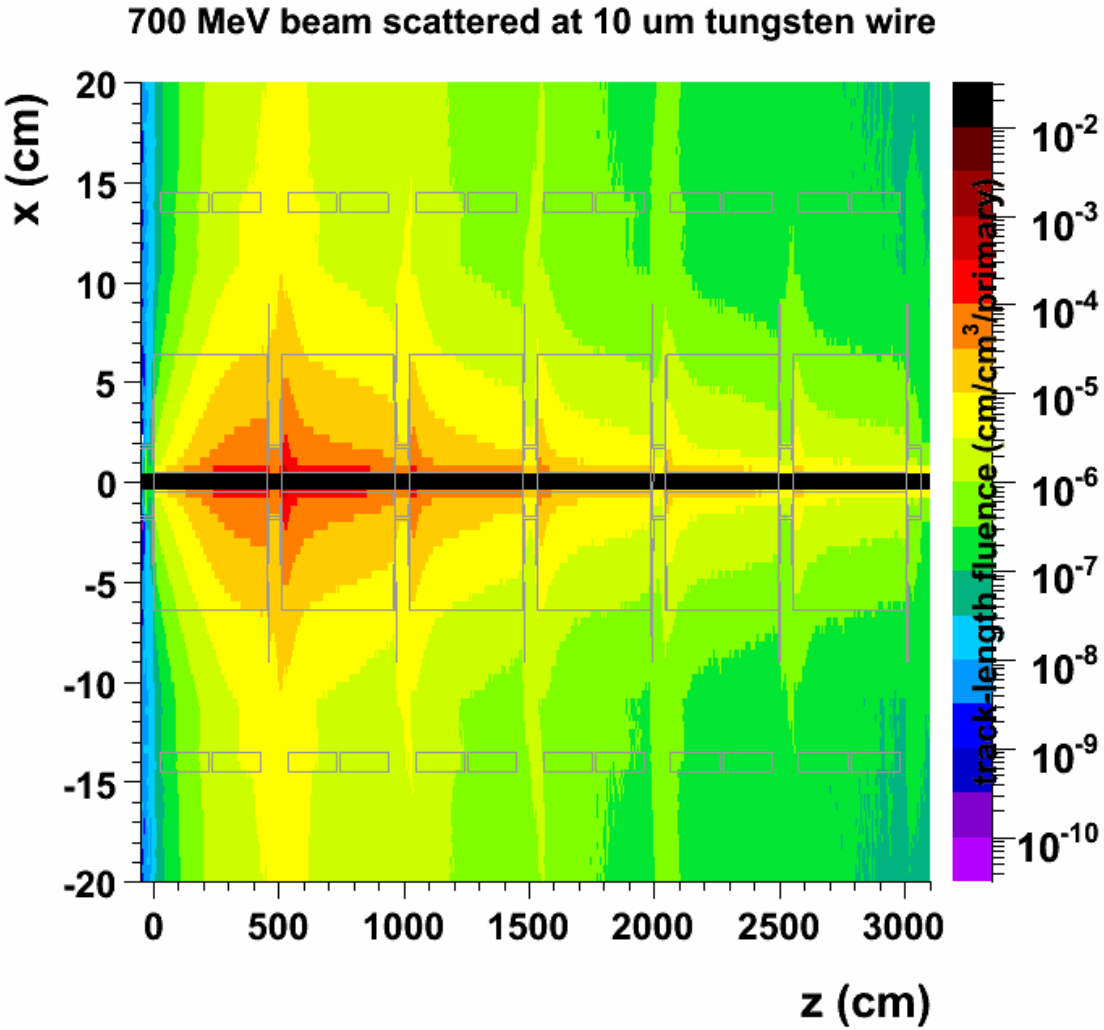
- Beam sizes
- Correlations beam loss monitors–wirescanners

FLUKA simulations

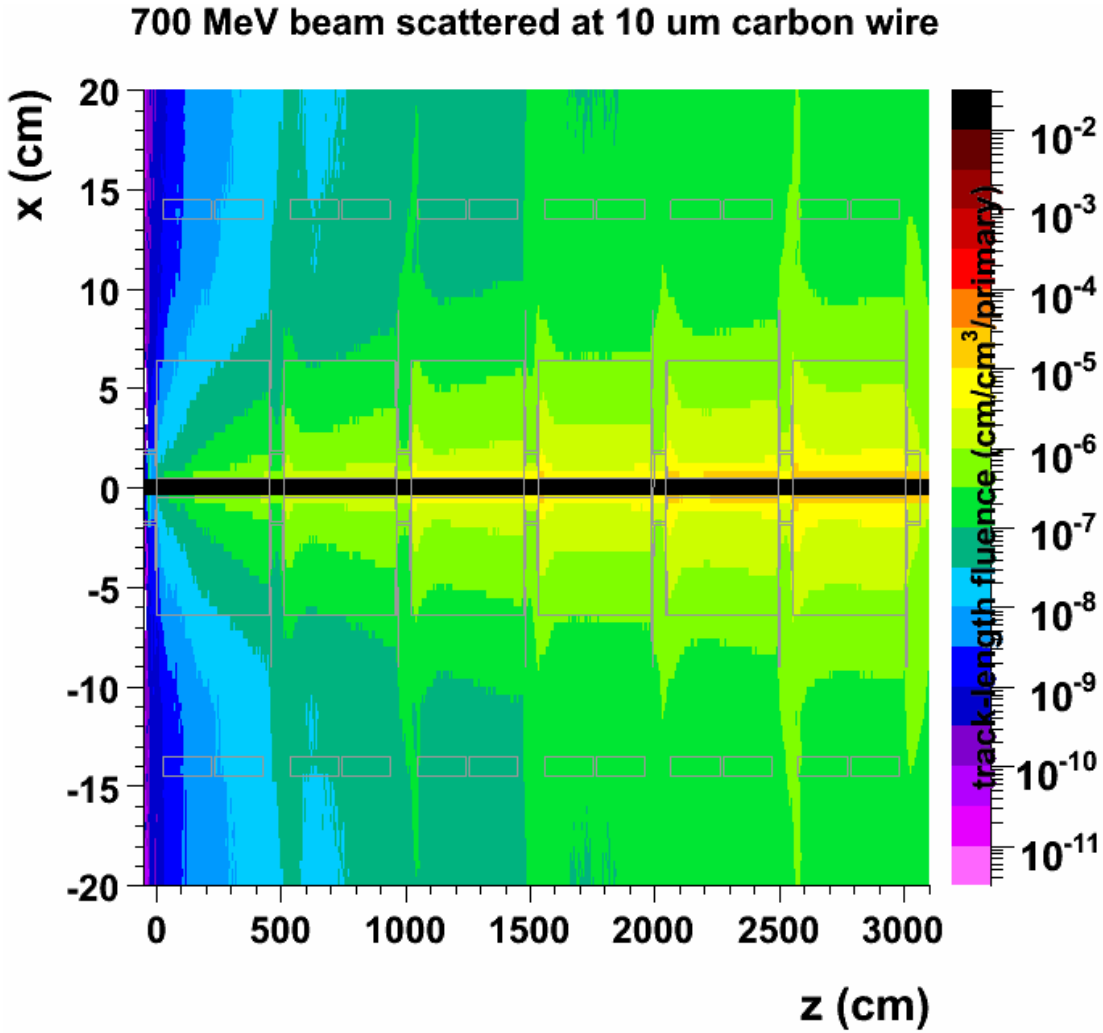
Simulation: 50 µm W



Simulation: 10 µm W

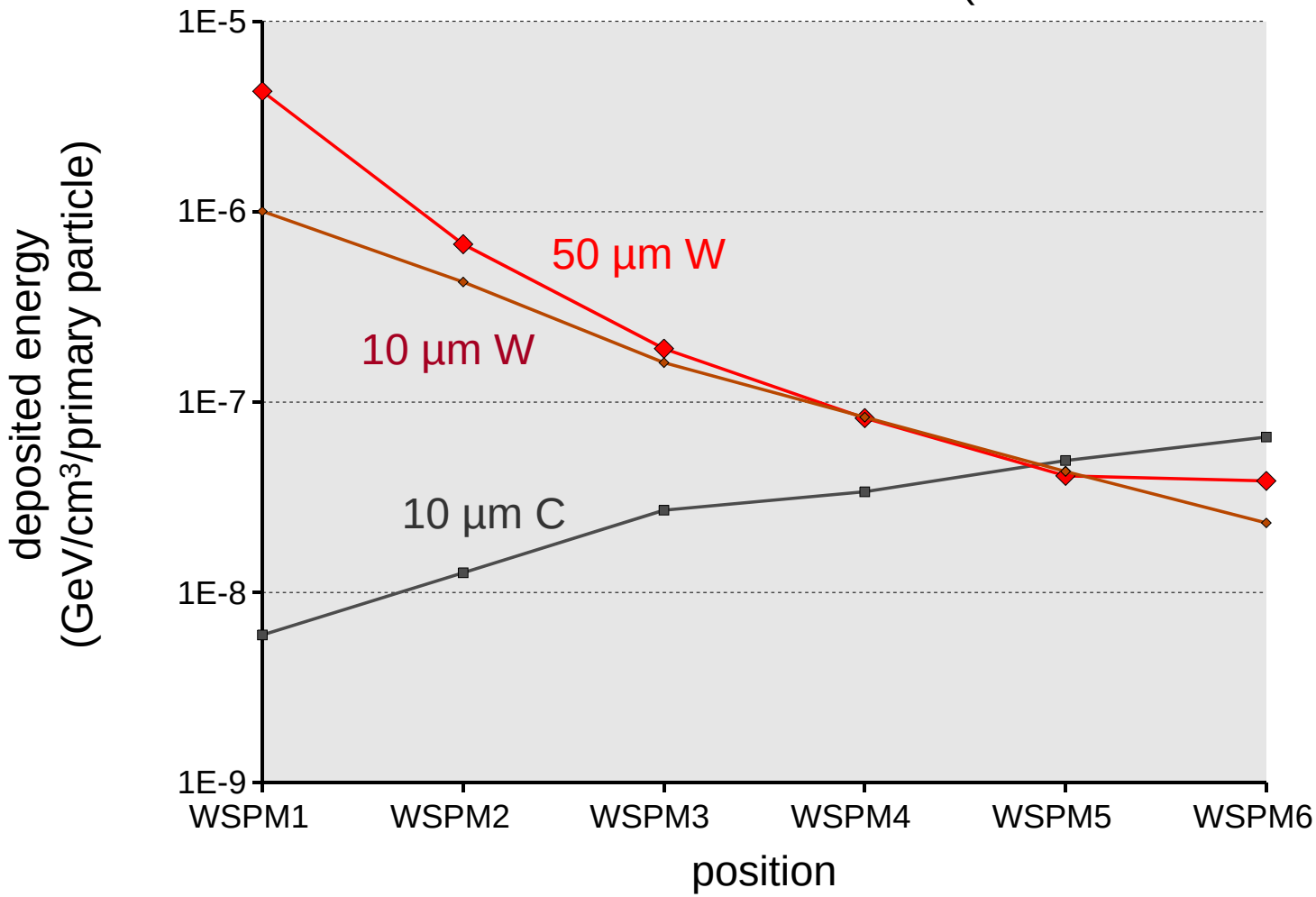


Simulation: 10 µm C



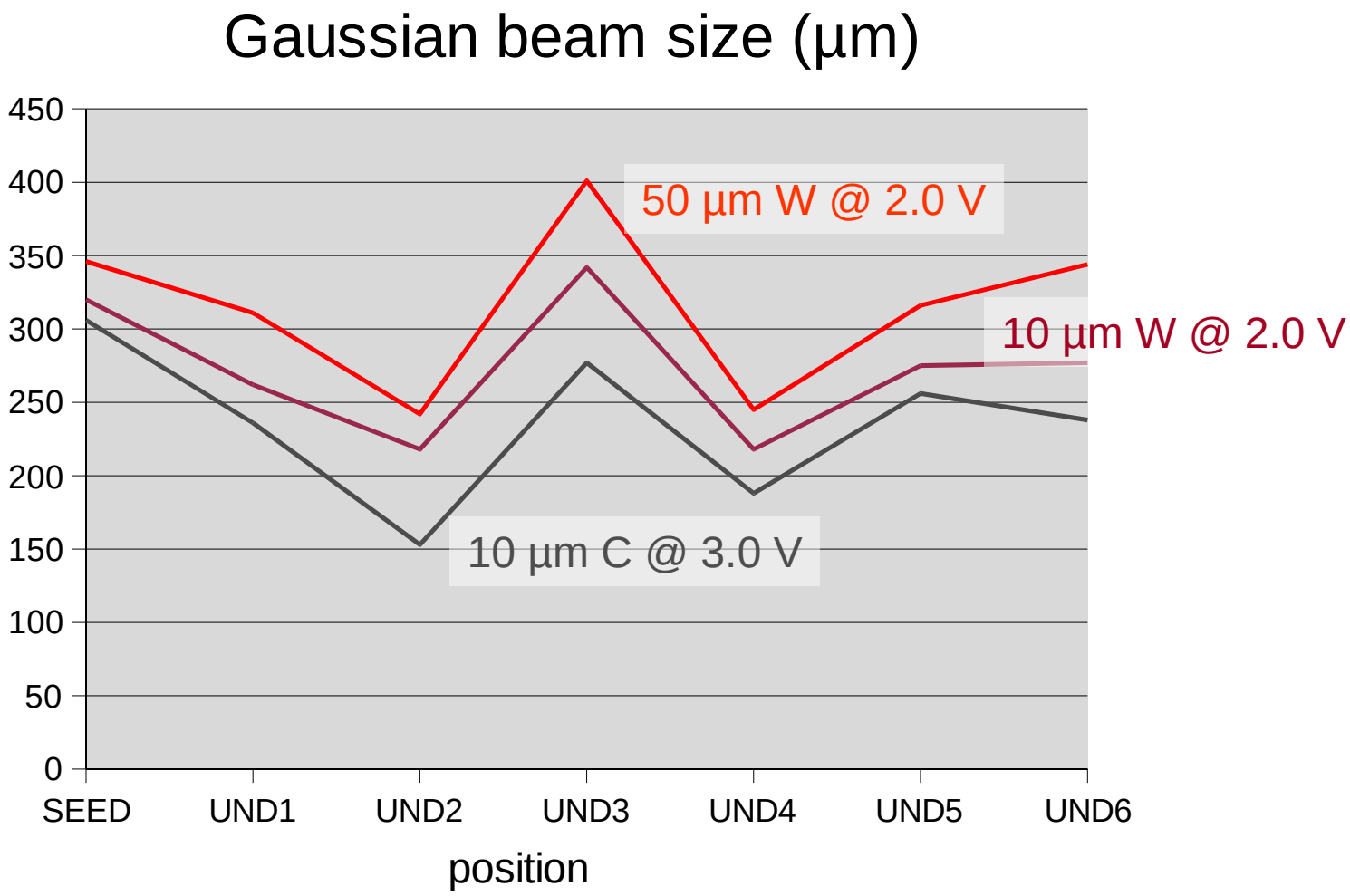
Relative energy deposition

(scan with wire 21SEED.VER)



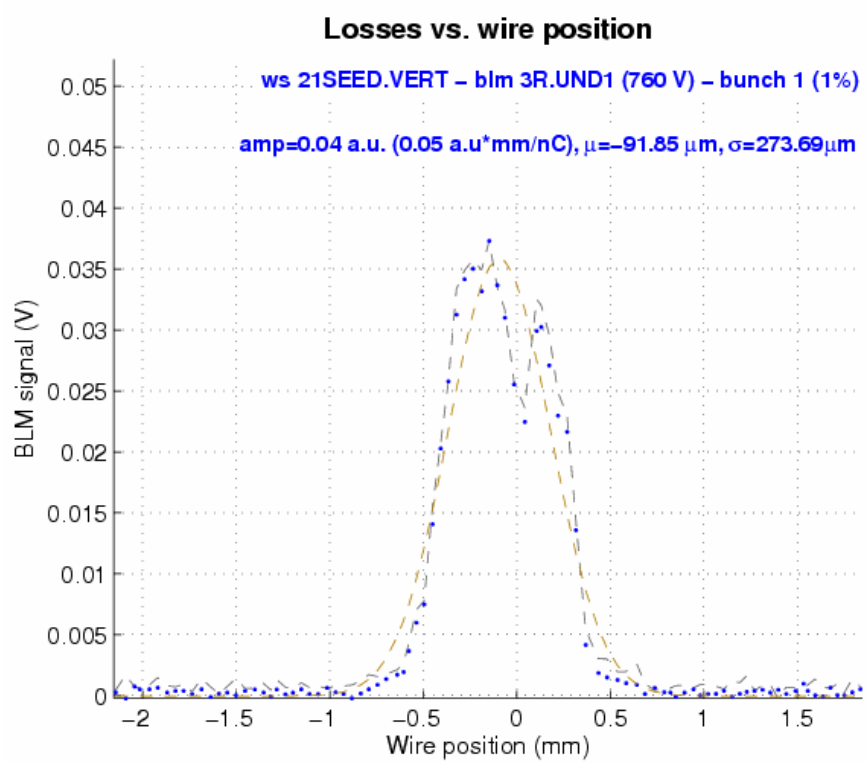
Measurements

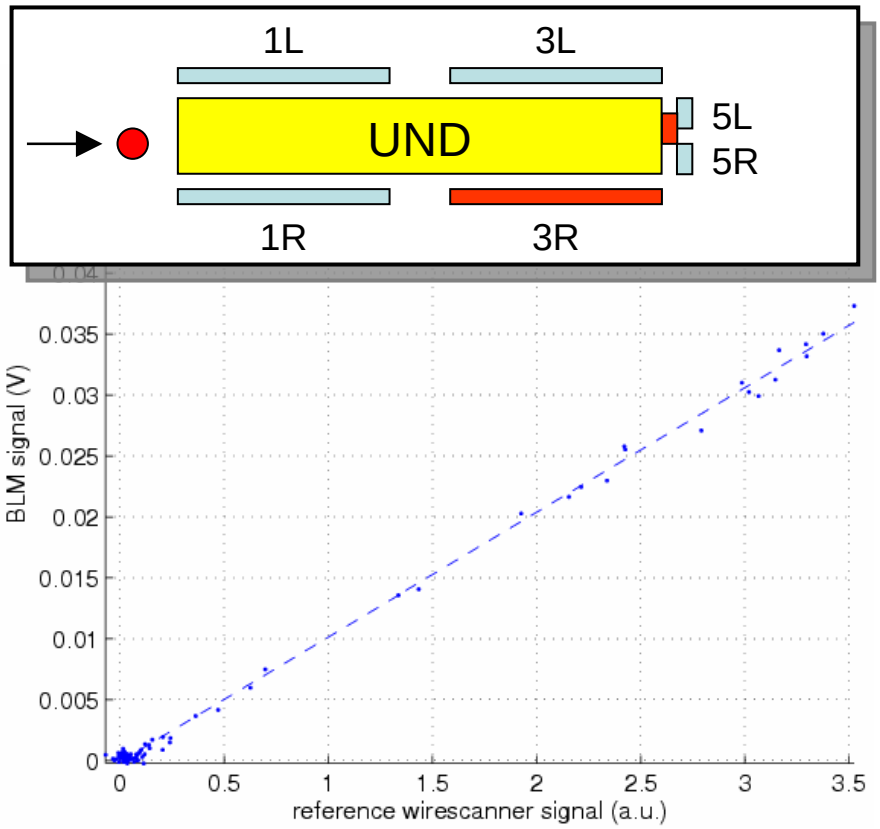
Beam Sizes


Gaussian beam size (µm)
450
400
350
300
250
200
150
100
50
0
50 µm W @ 2.0 V
10 µm W @ 2.0 V
10 µm C @ 3.0 V
SEED
UND1
UND2
UND3
UND4
UND5
UND6
position

Correlation BLM-WS

10 µm carbon wire, wirescanner PM at 3.5 V, BLM 3R

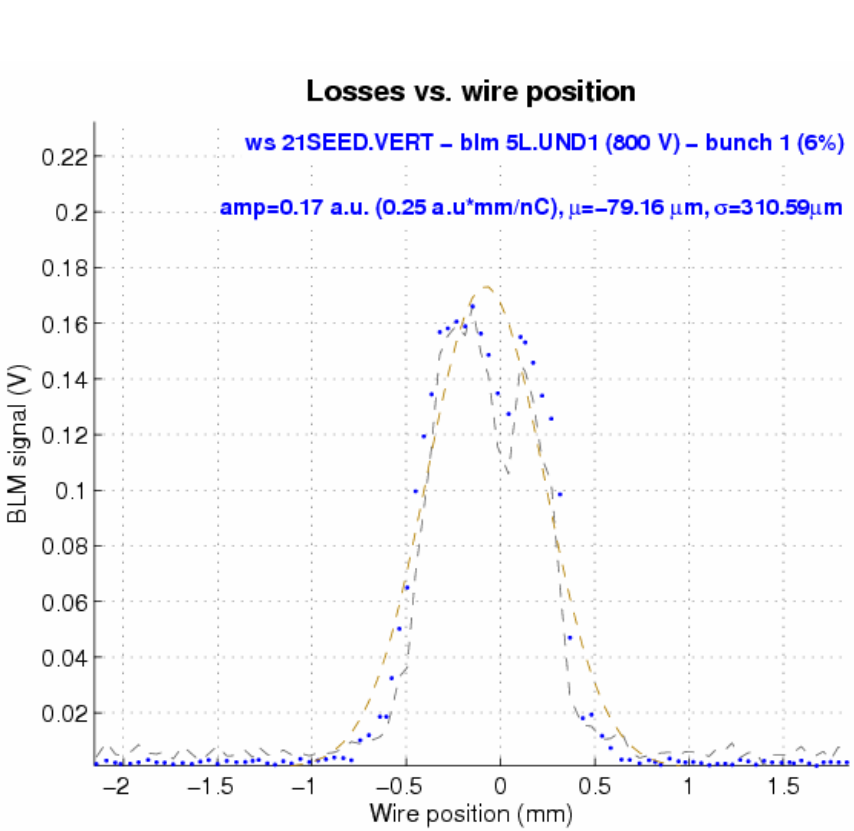


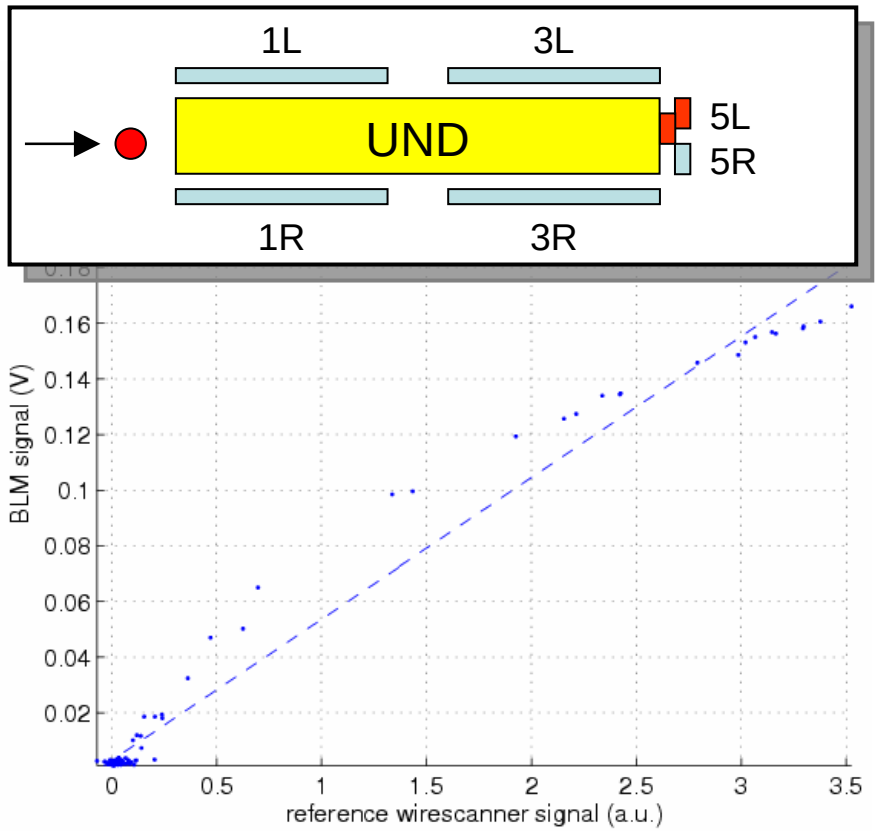


low WS signal, low BLM signal: linear behavior

Correlation BLM-WS

10 µm carbon wire, wirescanner PM at 3.5 V, BLM 5L

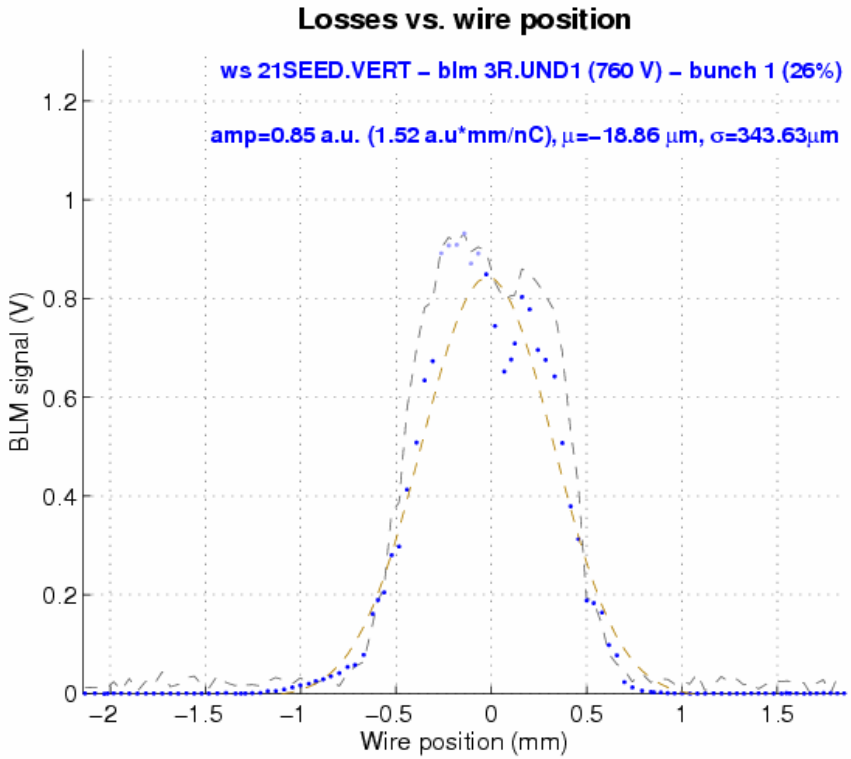


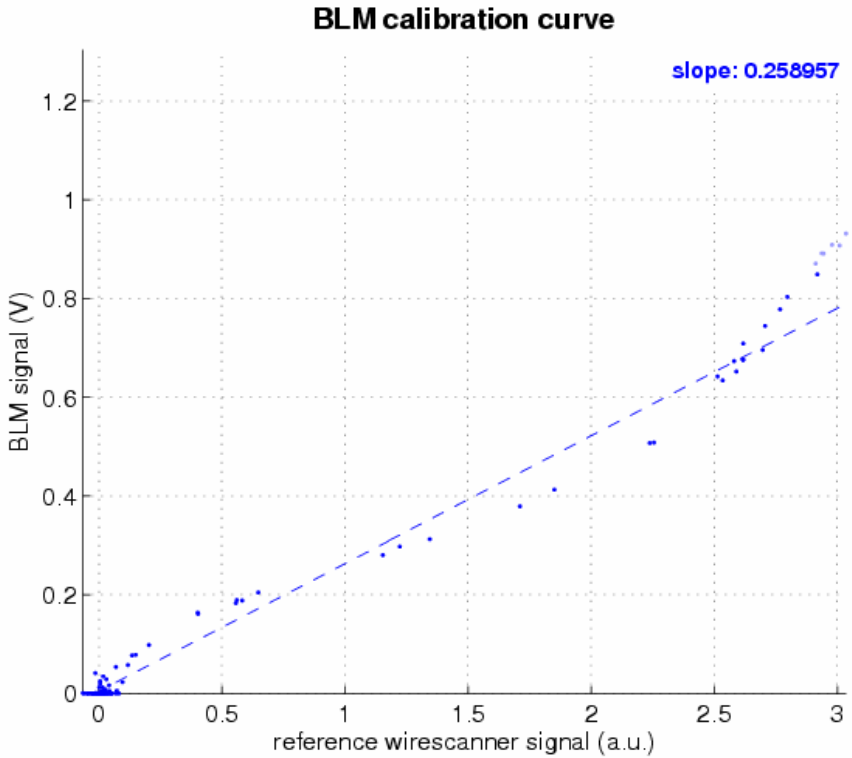


low WS signal, higher BLM signal: BLM nonlinearity

Correlation BLM-WS

50 µm tungsten wire, wirescanner PM at 2.0 V, BLM 3R

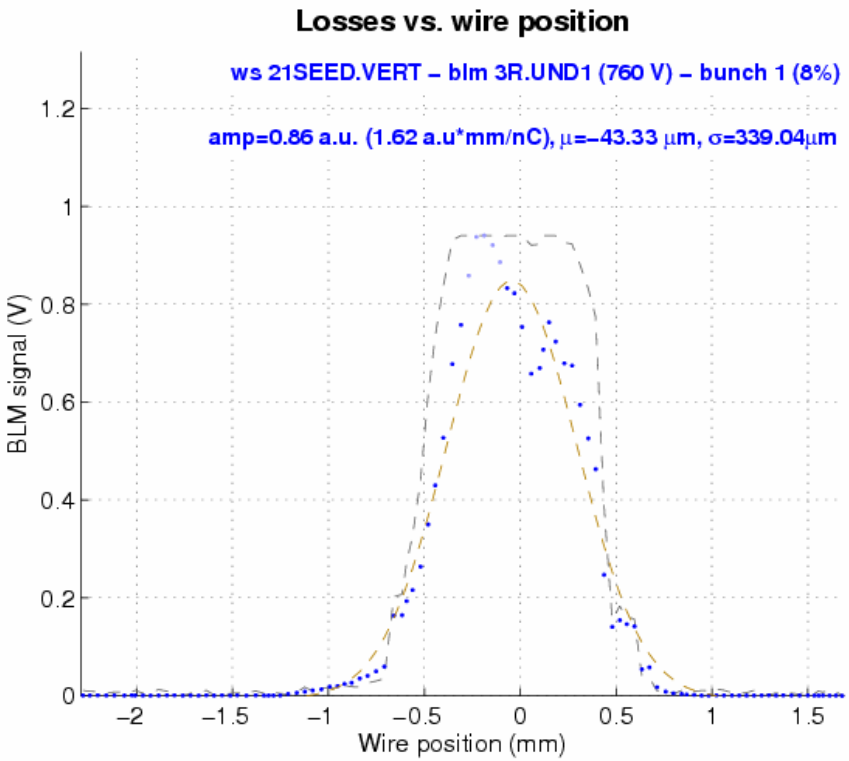


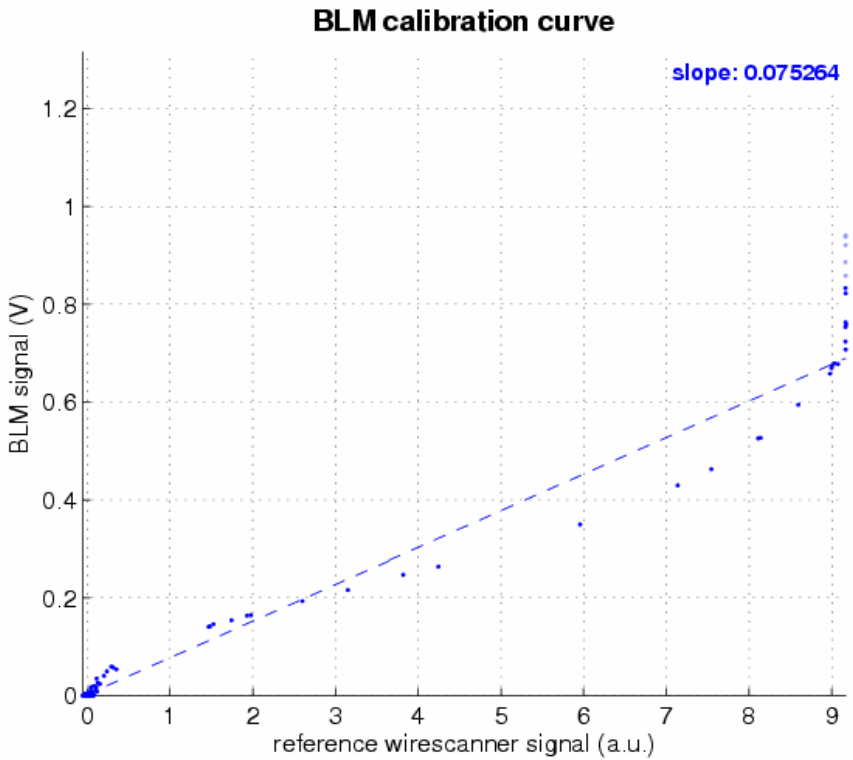


higher WS signal, high BLM signal: BLM nonlinearity+WS nonlinearity?

Correlation BLM-WS

50 µm tungsten wire, wirescanner PM at 2.5 V, BLM 3R





higher wirescanner PM voltage: WS nonlinearity less distinct

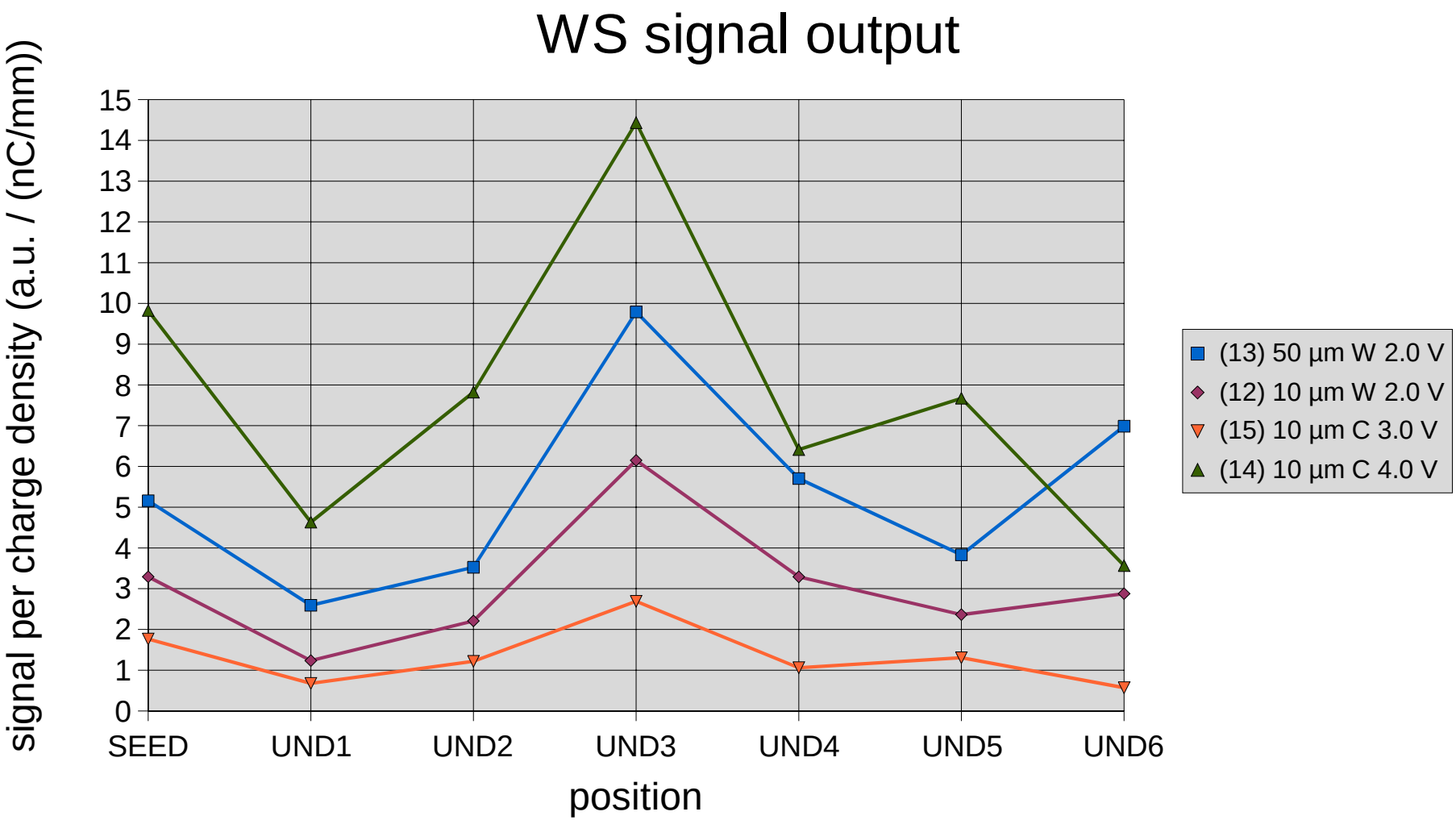
First Conclusions

- BLMs and WSs are linear for low signals (BLM signal < 0.1)
- WSs have wider linear range than BLMs
- Carbon: signals entirely in WS linear range

- **Reduction of WS light input will improve linearity**

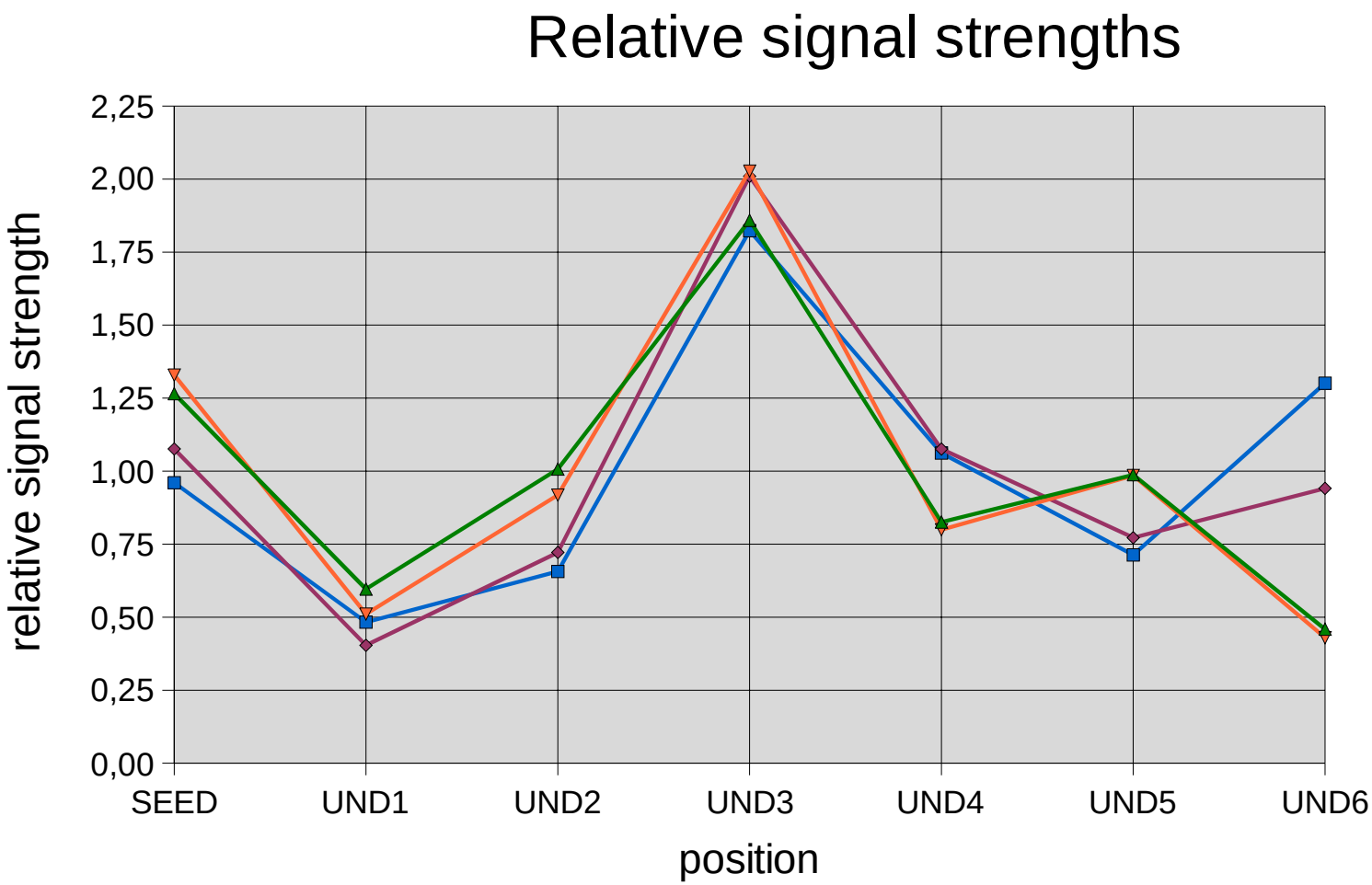
One more thing...

Relative Calibration



Relative Calibration

SEED	1.158
UND1	0.498
UND2	0.826
UND3	1.930
UND4	0.941
UND5	0.865
UND6	0.783



Relative Calibration