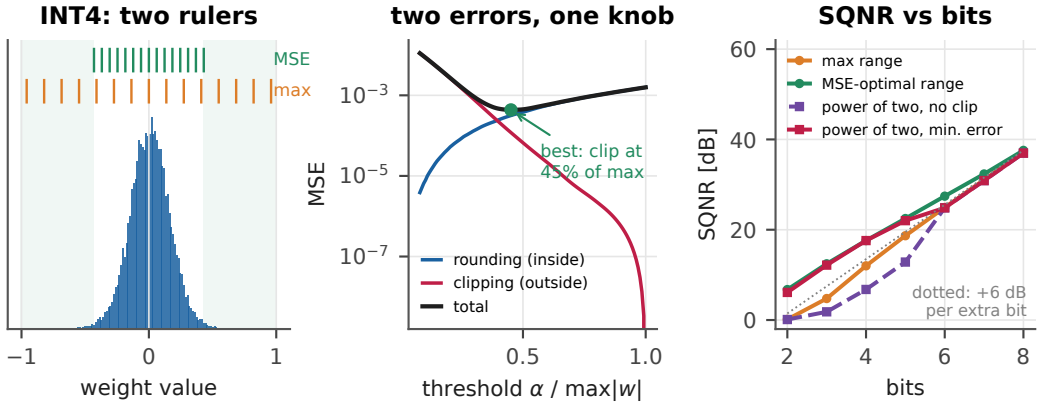

INT4: two rulers
MSE
max
−1
0
1
weight value
two errors, one knob
MSE
10^{-3}
10^{-5}
10^{-7}
best: clip at
45% of max
rounding (inside)
clipping (outside)
total
0.5
1.0
threshold α / max|w|
SQNR vs bits
SQNR [dB]
60
40
20
0
max range
MSE-optimal range
power of two, no clip
power of two, min. error
dotted: +6 dB
per extra bit
2
4
6
8
bits