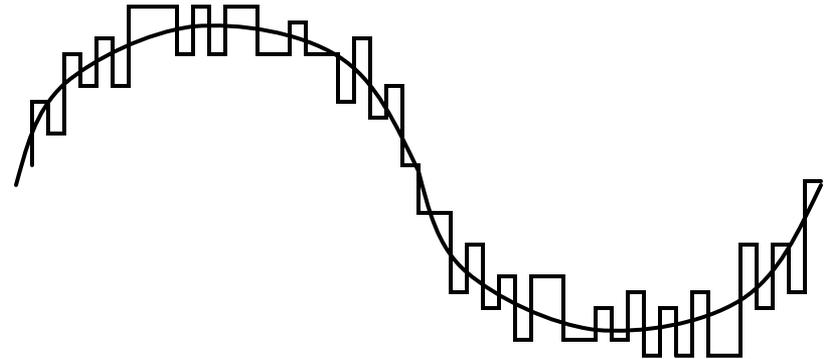
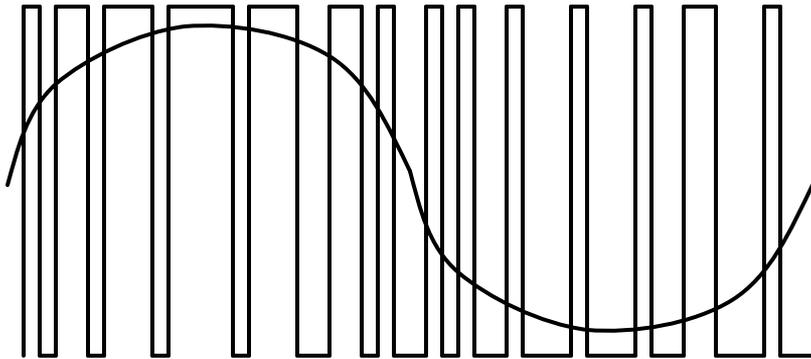


1-Bit, Multi-Bit Waveforms



■ 1-bit Advantages

- Linear – no matching

■ 1-bit problems

- Large steps (jitter sensitivity)
- Tonal quantization noise can cause “idle tones” (quantizer can’t be dithered properly)
- High-order loops become unstable with large inputs

■ Multi-bit advantages

- Tone-free quantization noise (can be dithered)
- Lower-order loops can often be used (easier stability)
- Small steps (low jitter sensitivity, less filtering required)

■ Multi-bit problems

- Matching; DAC element errors cause distortion + noise