

AUDIO MOSTLY 2023 WORKSHOP ON SUPERCOLLIDER

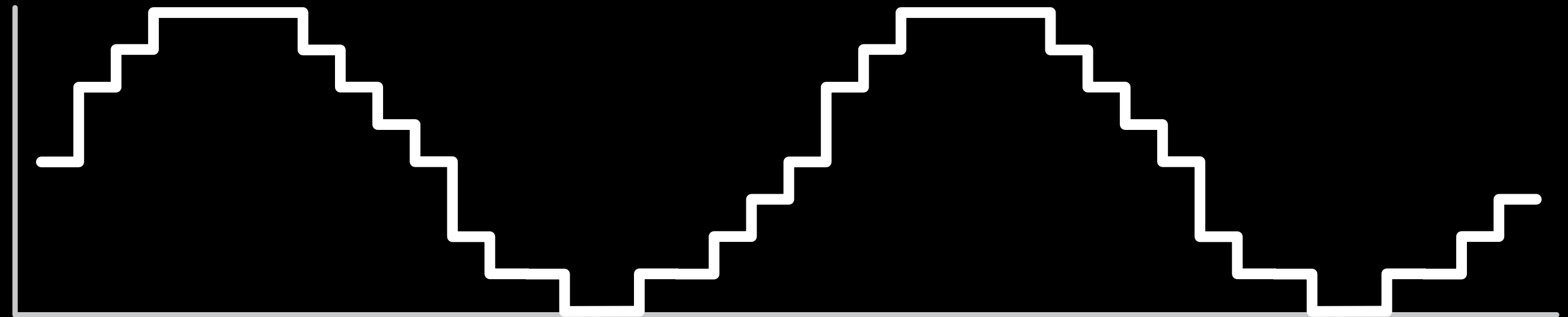
SAMPLE SYNTHESIS

NIKLAS RÖNNBERG

LINKÖPING UNIVERSITY
niklas.ronnberg@liu.se

SAMPLED WAVEFORM

- Wavetable synthesis
- Sample musical instruments
- Sample anything...



RECORDING SOUNDS

- Always keep as short distance between the sound source and the microphone
- Make sure that the stage/room is quiet.
- Use stands or boom
- Use a windshield



RECORDING (CONT.)

- Take care of the cable
- Use gaffa
- Avoid microphonics
- Use a clapper board
- Write down recording list



RECORDING (CONT.)

- Use a high pass filter/low cut when recording.
- Record as loud as possible with out saturation/distorsion.
- Use some limiting when recording.
- Always listen to the sound in headphones.

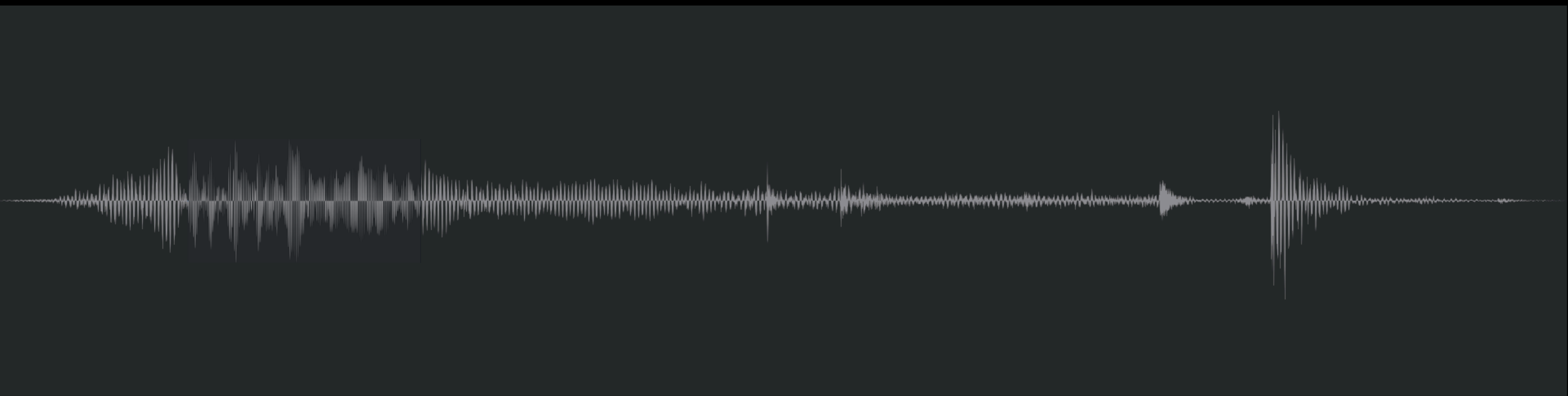


SOUND DESIGN - FOLEY

- Record sound
- Edit sound
- Shape sound
- Potato flour in plastic bag = Steps in the snow, etc ...



THE SHOWER CABIN DOOR



THE SOUND SAMPLE

- The sound sample was roughly around 41.20Hz, i.e., E1
- It was slightly adjusted in pitch/speed
- And trimmed to have 0 crossings and similar phase at the start and the end
- Then saved as a wave-file in mono



SUPERCOLLIDER AND SAMPLE PLAYBACK

- A sample buffer is used on the client side
- `Buffer.read(server, path)`
- `server` = the server name, usually `s`
- `path` = the path to the audio file (as a string)
- The buffer is then sent to the synth definition on the server.



```
var soundSample = Buffer.read(s, thisProcess.nowExecutingPath.dirname++ "/sample.wav");  
var coolSynth = Synth.new(\coolSynth, [\bufnum, soundSample]).register;
```

SUPERCOLLIDER AND SAMPLE PLAYBACK

- `PlayBuf.ar(numChannels, bufnum: 0, rate: 1.0, trigger: 1.0, startPos: 0.0, loop: 0.0, doneAction: 0)`
- `numChannels` = the number of audio channels in the sample
- `bufnum` = is the received sample buffer
- `rate` = is the playback speed (i.e., pitch)
- `trigger` = resets the playback to the start position
- `startPos` = the sample position for the start of the playback
- `loop = 1` is loop, `0` is not loop
- `doneAction` = what should happen when the sample playback has reached the end



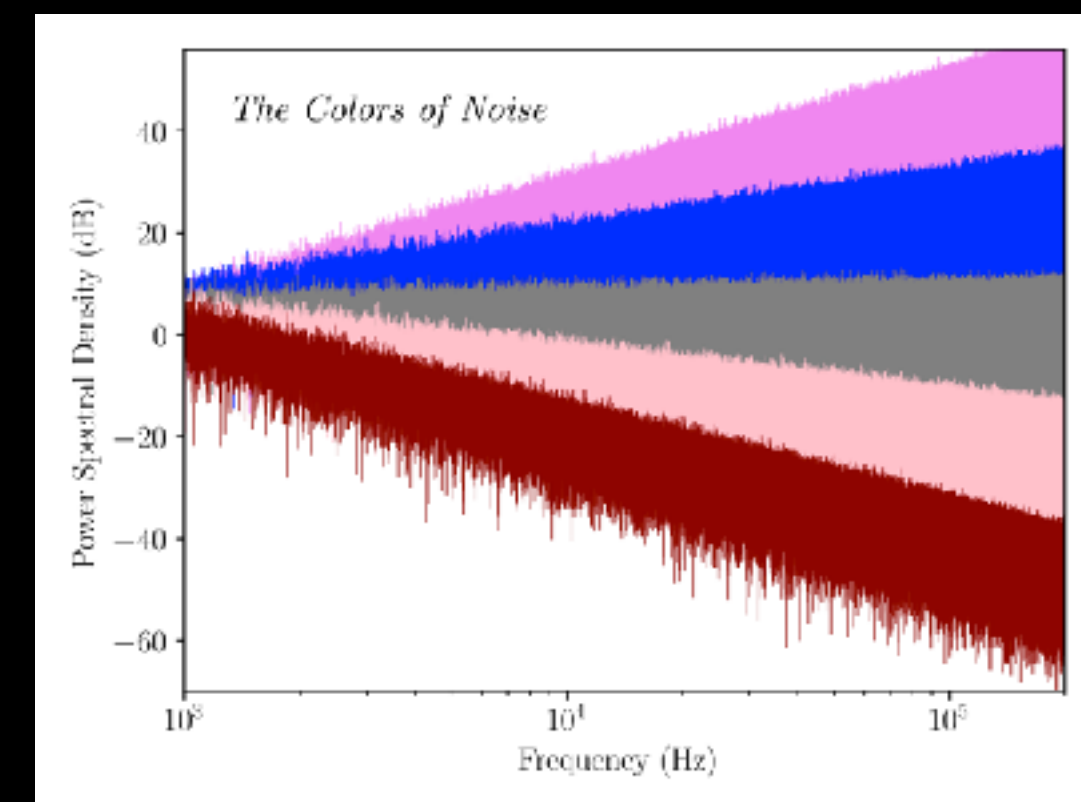
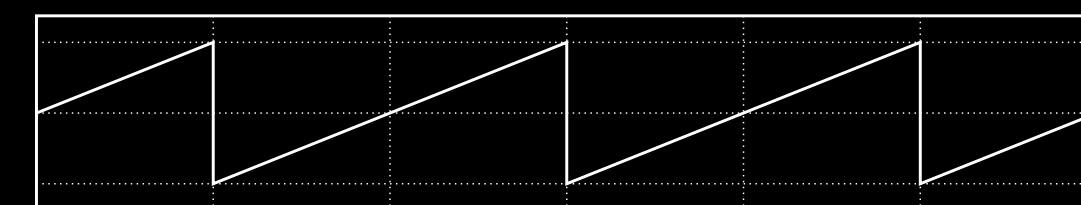
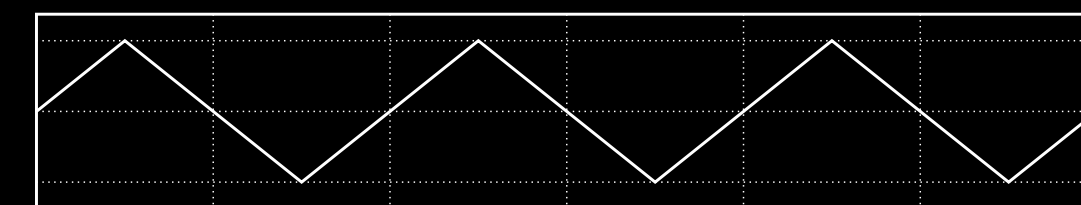
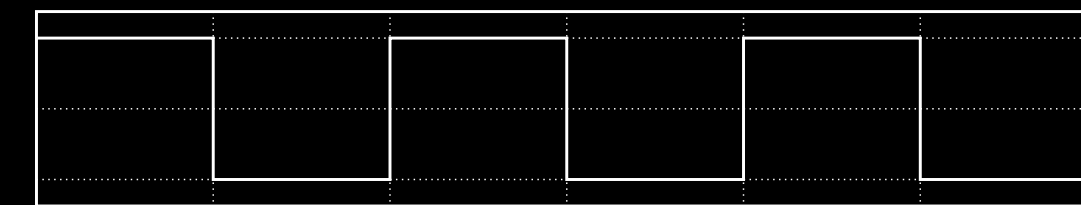
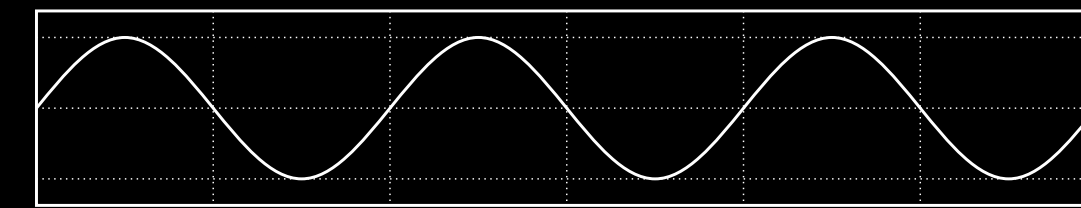
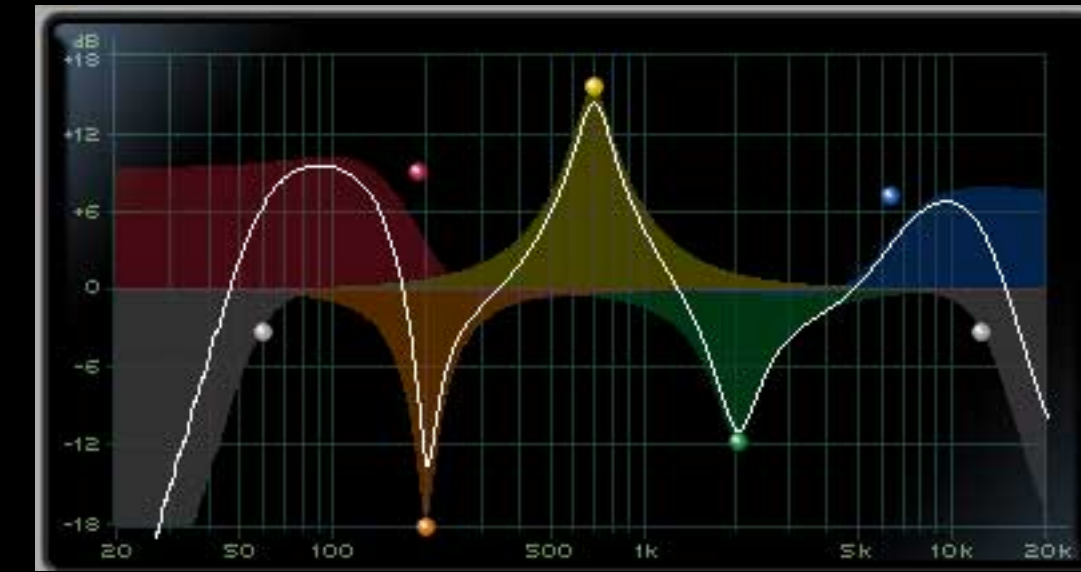
SUPERCOLLIDER AND SAMPLE PLAYBACK

- As the sample was "tuned" in E, the playback rate was adapted
- `var tuning = (note.midicps / 28.midicps);`
- And this ratio (tuning) was used to adjust the rate
- `rate: BufRateScale.kr(bufnum) * tuning,`



GOING FURTHER

- Filters (HPF, BPF, BRF, LPF, Shelving)
- Mix with other waveforms (LFTri.ar, LFPulse.ar, LFSaw.ar, ...)
- Noise (WhiteNoise.ar, PinkNoise.ar, BrownNoise.ar)
- Use frequency modulation (FM) for more changes of the timbre



LET'S CONTINUE CODING

- Workshop examples and extras
https://www.itn.liu.se/~nikro27/am2023_ws/