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https://github.com/s-grundner/LVA-EIC-KV

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Tiny Tapeout - MIDI Polyphonic Synthesizer

Technical Report

KV Entwurf Integrierter Schaltungen - WiSe25

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Abstract MIDI Polyphonic Synthesizer on the Tiny Tapeout ASIC

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1. Introduction

2. Notes

TODO:

1. Link with Markdown documentation.
2. Synthesizer Oscillator stack routing
3. rx Testbench
4. midi Testbench

Oscillators store the MIDI note number (0-127) in a register.

Incoming Note ON:

- Find first free oscillator (enabled = 0 -> unlocked)
- and write note number to register
- set enabled = 1 (locked).

Incoming Note OFF:

- Find matching note number in all oscillators
- set enabled = 0 (unlocked)
- Disable flag: midi_note == stored_note AND note_off

3. System Overview

4. Oscillator Design