

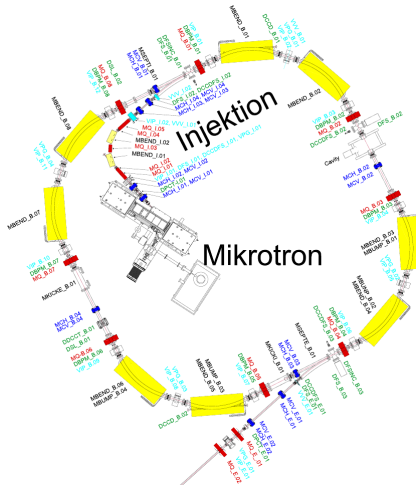
Longitudinal Bunch Diagnostic at the KARA Booster Synchrotron

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Facility Overview



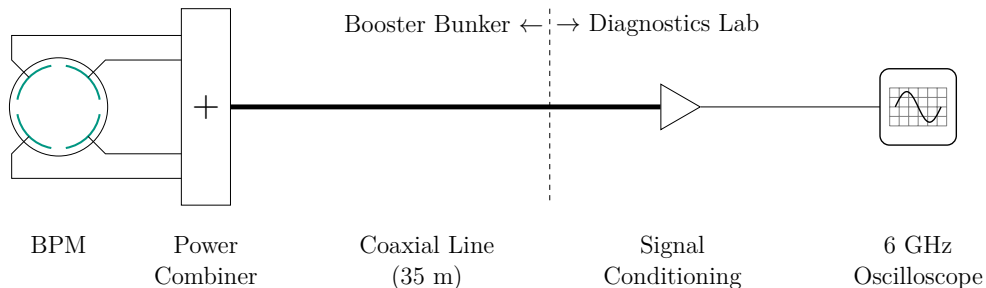
KARA Injection Facility

- 90 keV electron gun
- 53 MeV racetrack microtron ($f_{RF} = 3$ GHz)
- Injection line (\rightarrow booster)
- 500 MeV booster synchrotron ($f_{RF} = 500$ MHz)
- Extraction line (\rightarrow storage ring)

The booster synchrotron

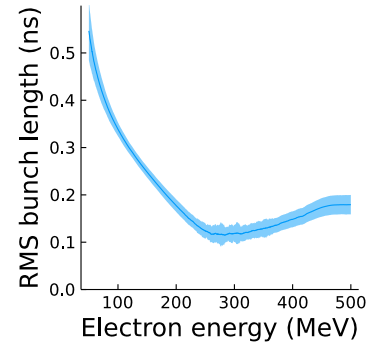
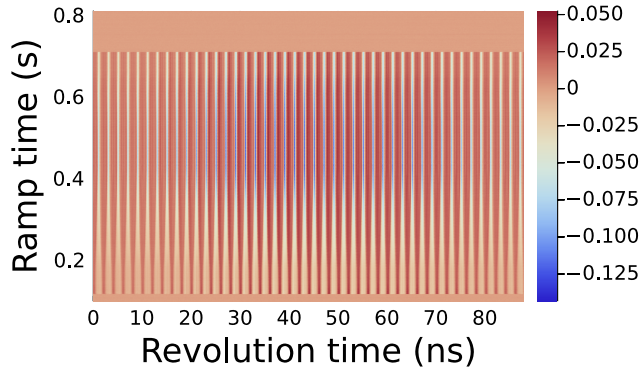
- 26 m circumference (Similar to cSTART ring)
- Ramps energy from 53 MeV to 500 MeV in 650 ms
- Re-bunching from 3 GHz to 500 MHz

Measurement Setup for First Test

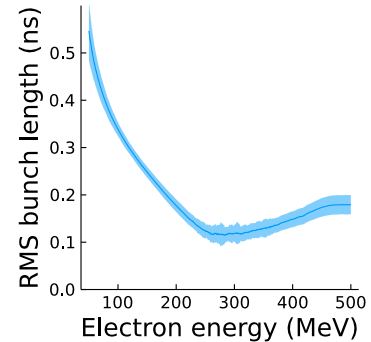
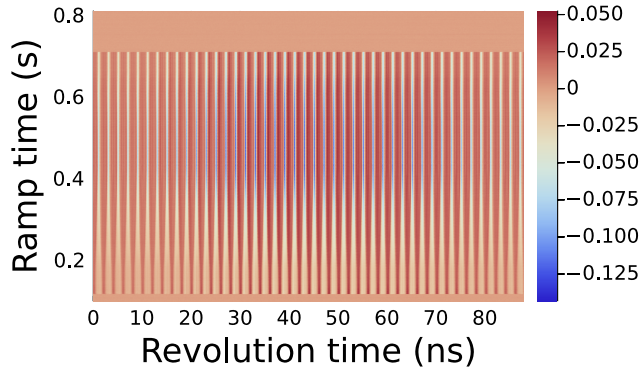


- Button BPM signals are combined with a RF power combiner into a sum signal
- After 35 m coaxial line, sum signal is amplified and read out with an oscilloscope
- Minimum re-arm time and maximum data transfer rates prohibit turn-by-turn measurements
- ⇒ Move towards FPGA-based digitizers and KAPTURE

First Bunch Length Results



First Bunch Length Results



⇒ See you later at my poster!