MAX IV - status and brief inside view

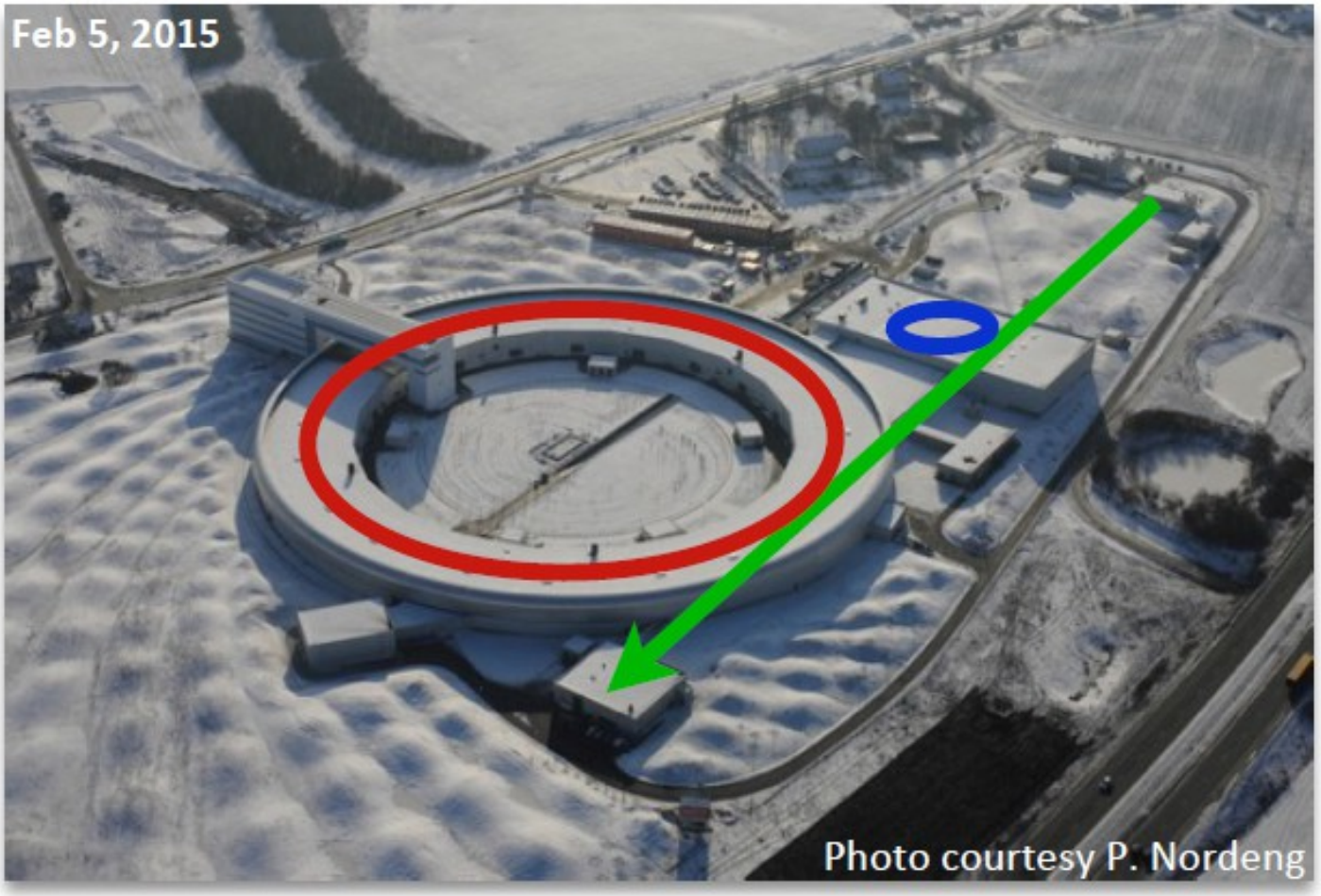
Bernhard Meirose (MAX IV)

LUNDS UNIVERSITET

The MAX IV Facility

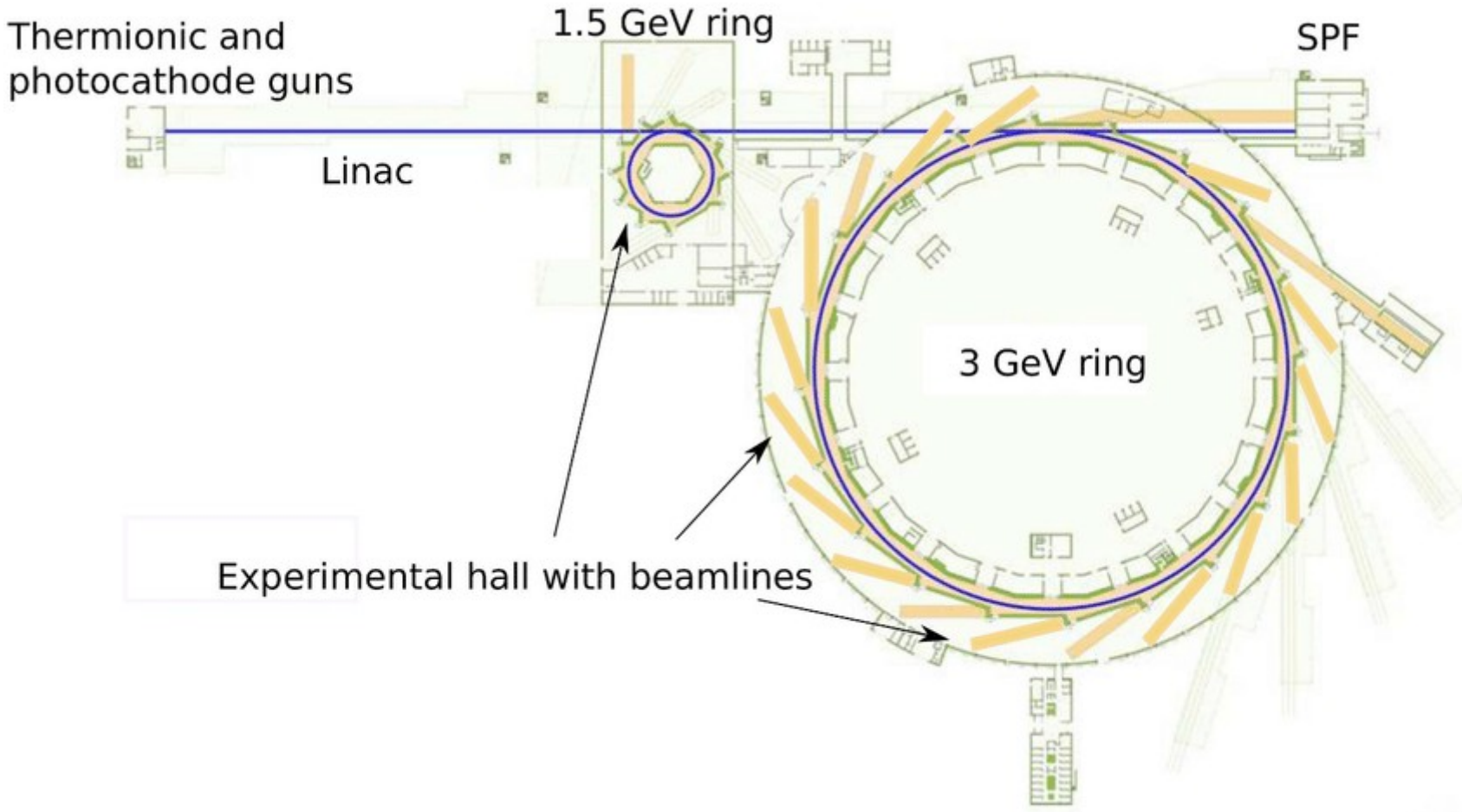
The MAX IV Facility

- One linac
- Two separate storage rings at 1.5 GeV (UV) and 3 GeV (x-rays)



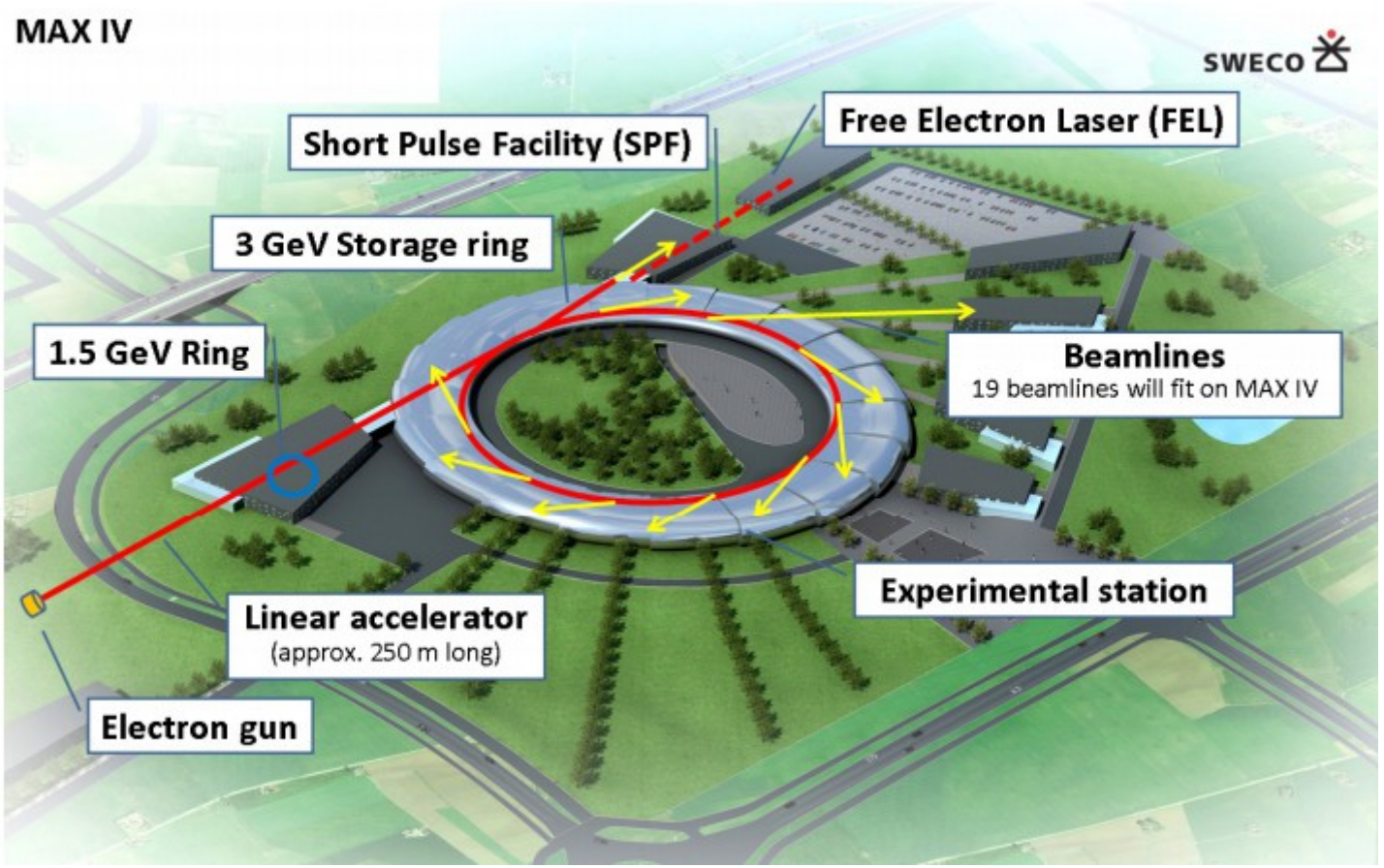
The MAX IV Facility

- One linac
- Two separate storage rings at 1.5 GeV (UV) and 3 GeV (x-rays)



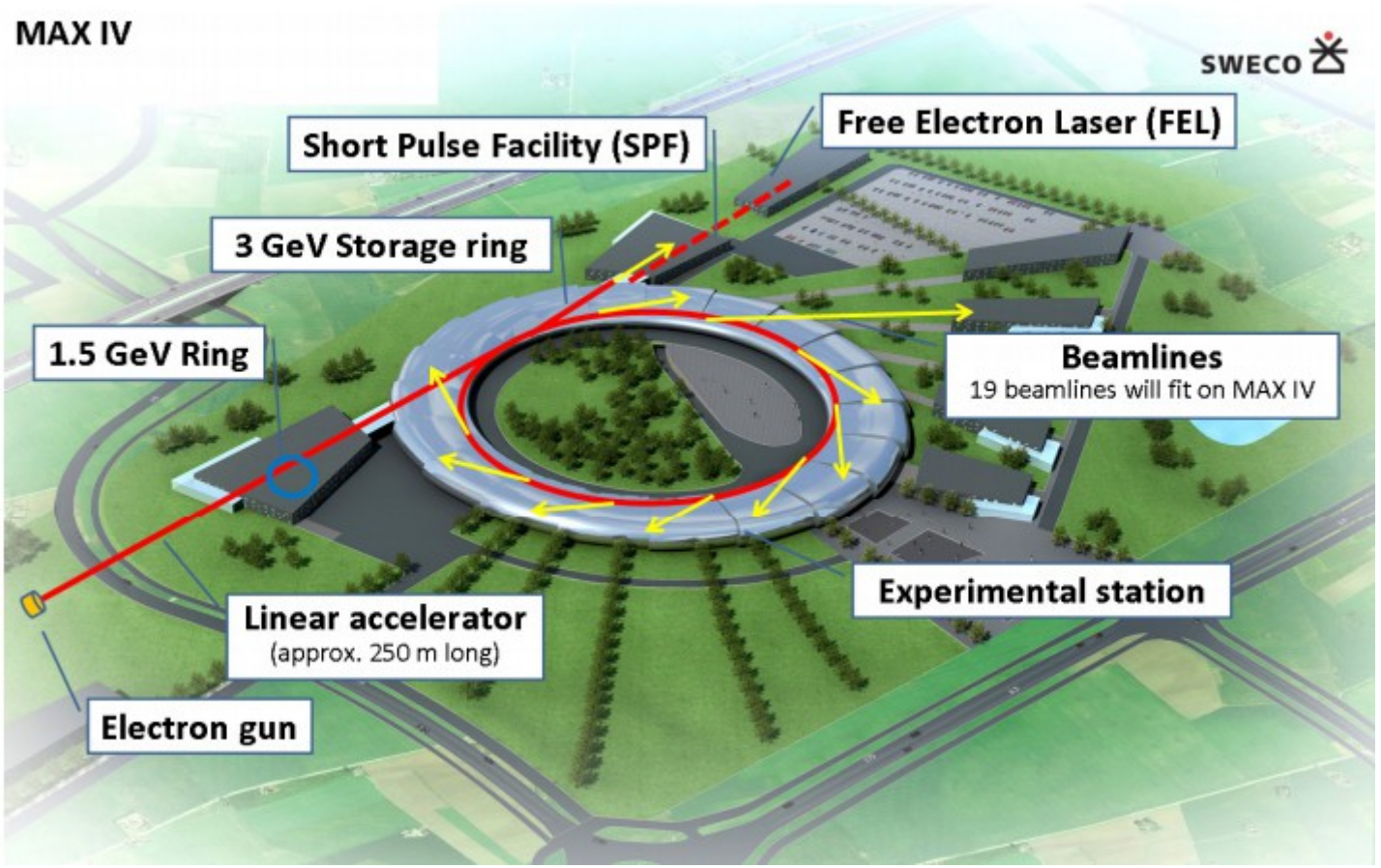
Status

- Total of 16 beamlines funded to date
- BioMAX, Hippie, NanoMAX: operational and receive regular users
- Bloch and FinEstBeAMS: receiving first friendly users for commissioning

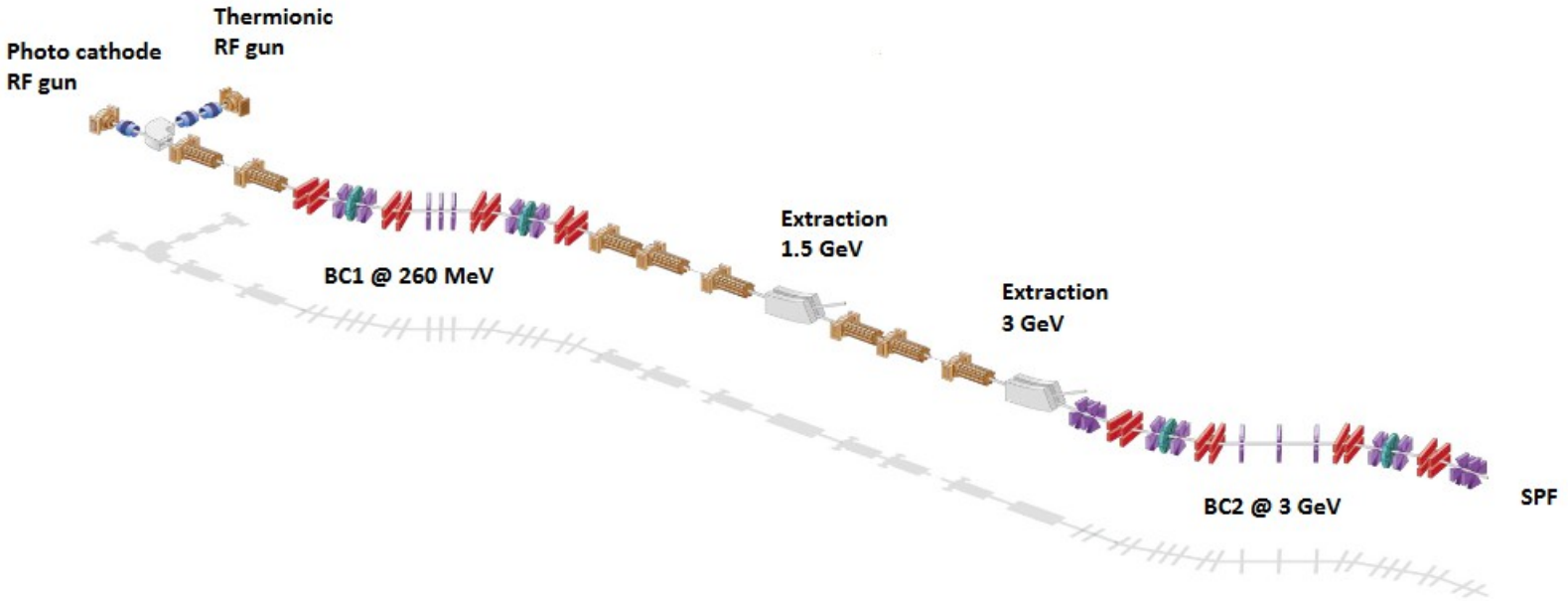


Status

- Balder and Veritas: will receive first friendly users (commissioning) in 2019
- From January 2017 to August 2018: more than 300 users did 450 visits



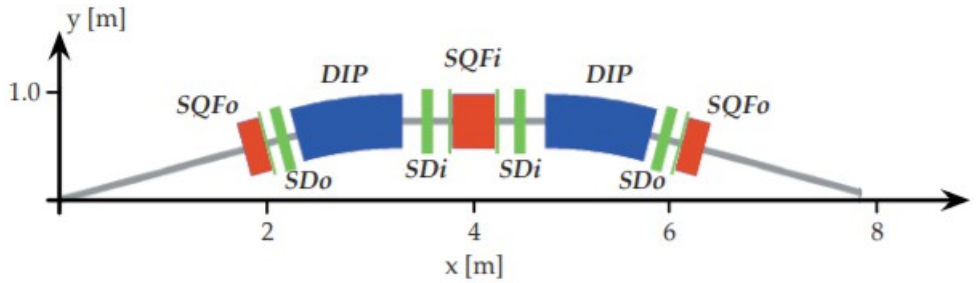
Linac (~ 300m)



- Continuous top-up injector to both storage rings
- Also accelerates and compresses electron bunches for the SPF
- Photo-RF gun for SPF pulses
- Thermionic RF gun for storage ring injection
- Design repetition rate as ring injector: 10 Hz (current: 2 Hz)
- Design repetition rate for SPF: 100 Hz (current: 2 Hz)
- Energy spread < 0.4%

1.5 GeV Storage Ring (R1)

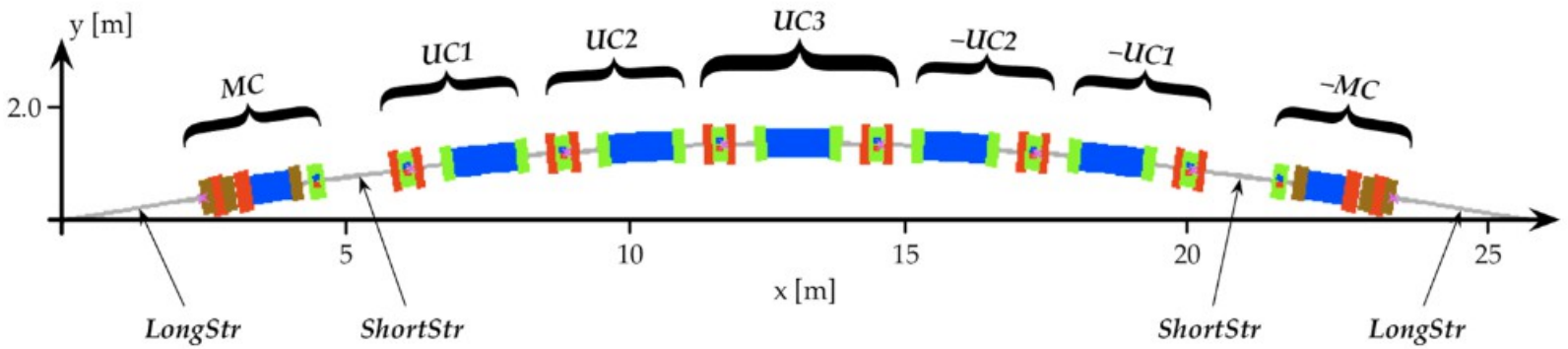
- Circumference 96 m
- 500 mA design store current (currently at 200-300 mA)
- Double bend achromat lattice
- 12 achromats 8 m long (10 ID)
- Compact magnet block
- low radio-frequency (100 MHz → max. 32 bunches spaced by 10 ns)



2 dipoles,
Bending angle: 30^0
Bending radius: 3.8 m

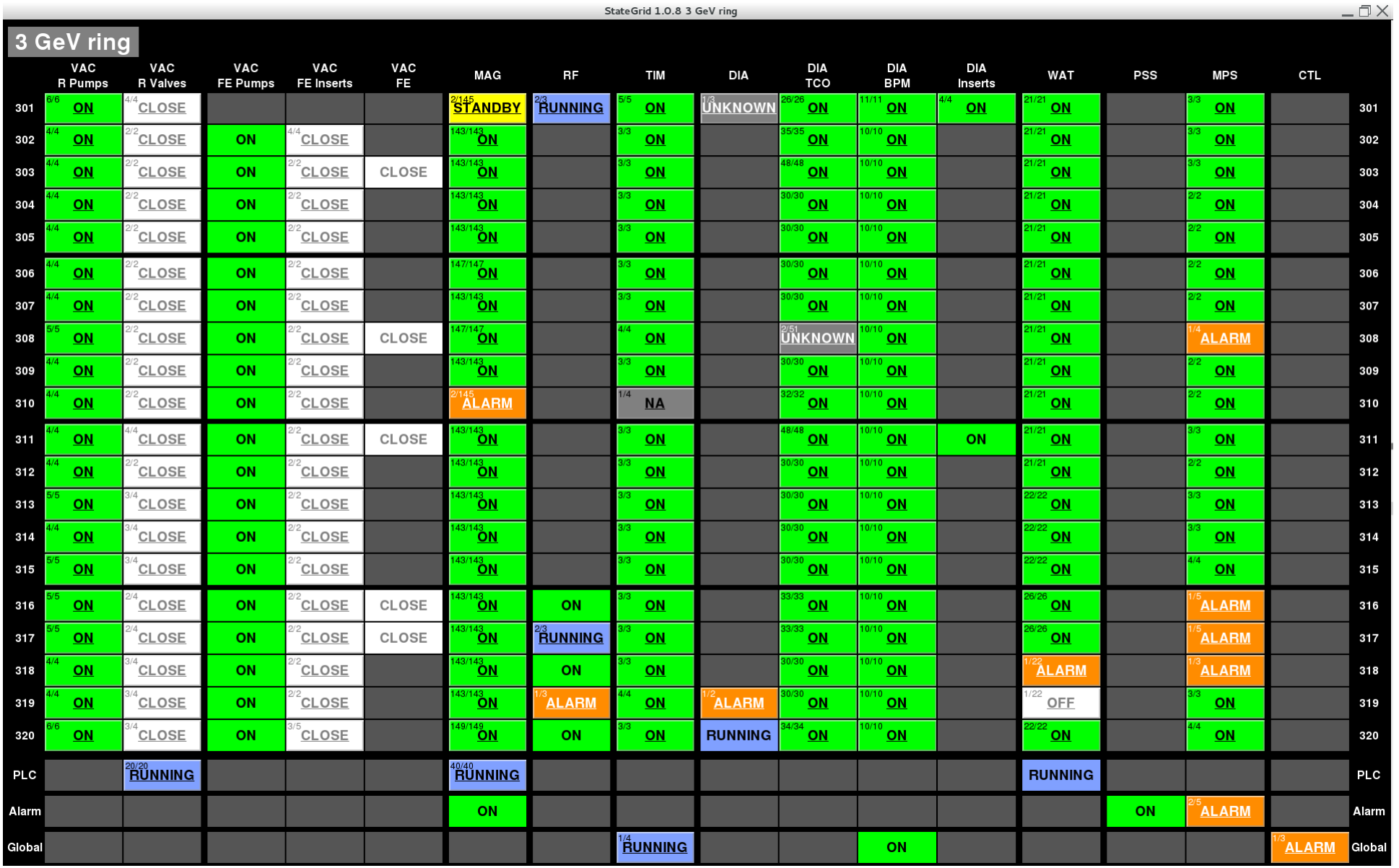
3 GeV Storage Ring (R3)

- Circumference 528 m
- 500 mA design store current (currently at 150-200 mA)
- 7-bend achromat lattice
- 20 achromats 26.4m long (19 ID)
- Compact magnet block
- low radio-frequency (100 MHz → max. 176 bunches spaced by 10 ns)
- Current * Lifetime > 3 A·h

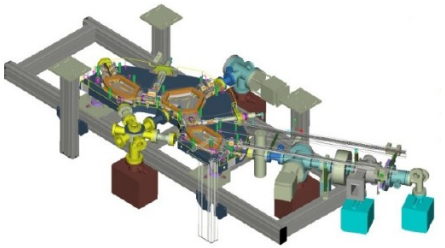


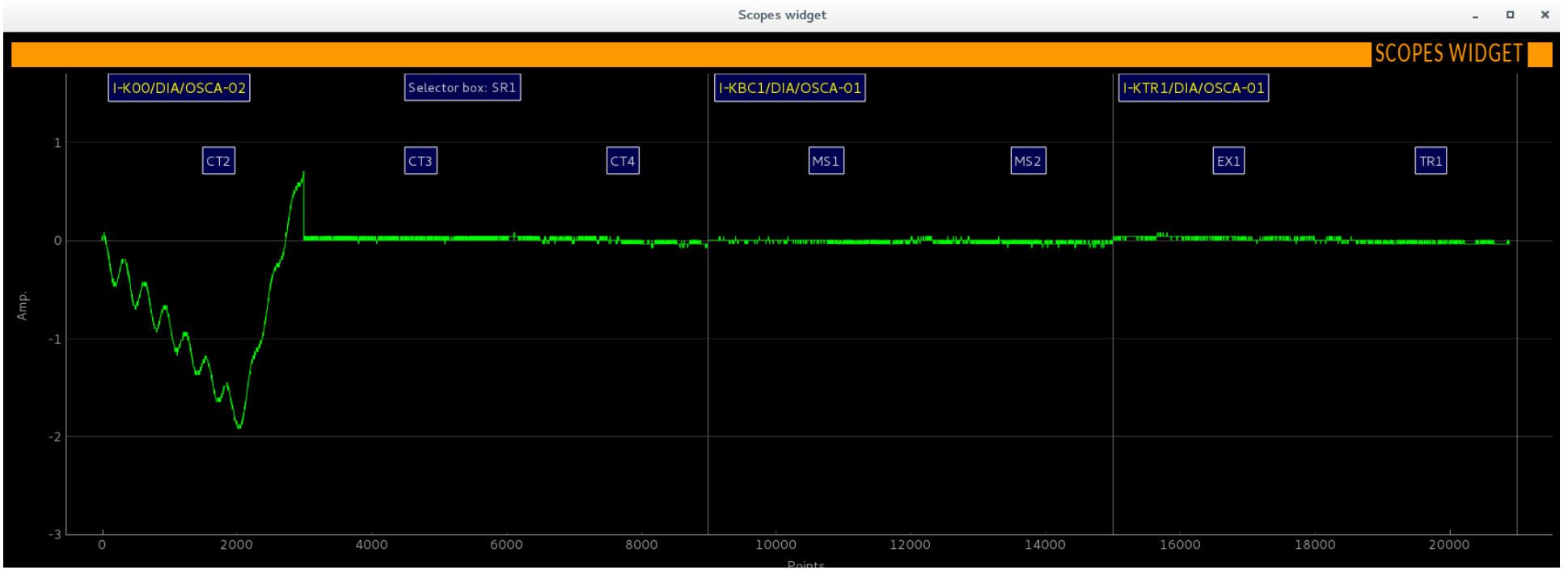
7 dipoles,
Bending angle: 18^0
Bending radius: 19 m

3GeV Ring State Grid

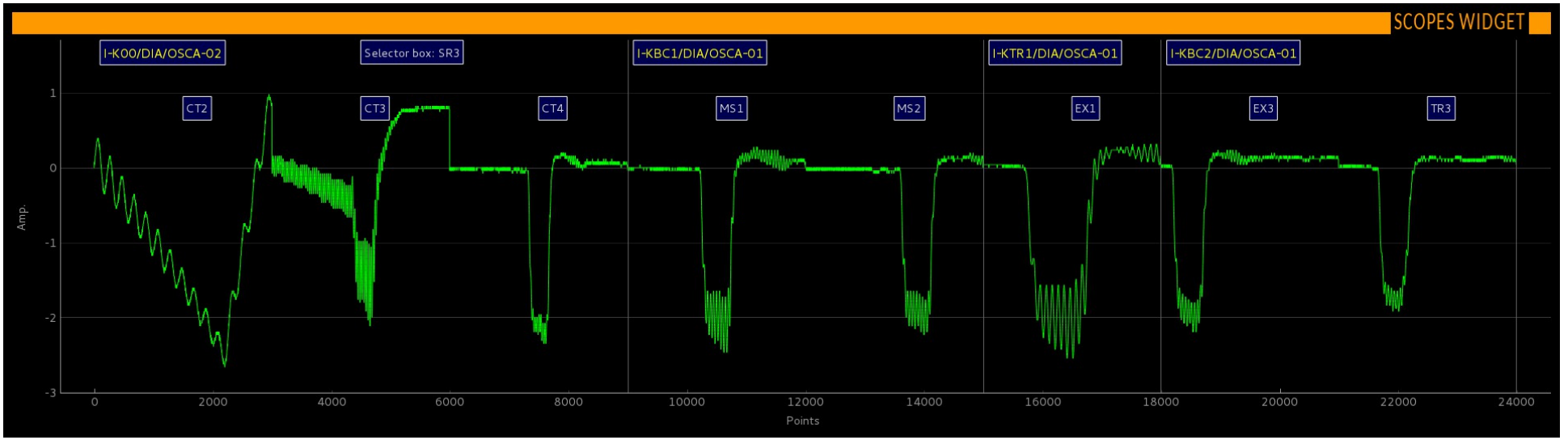


Thermionic Gun

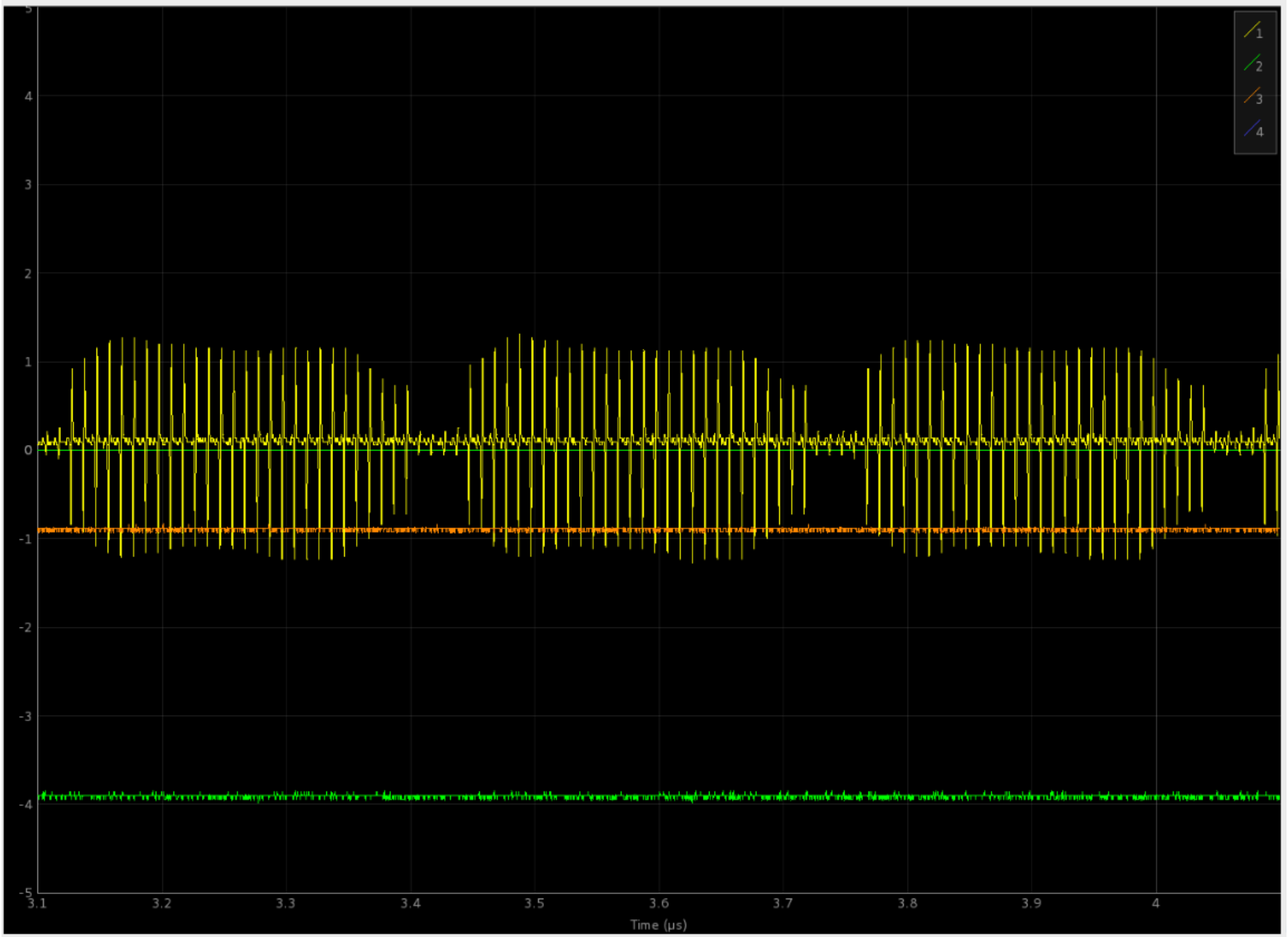




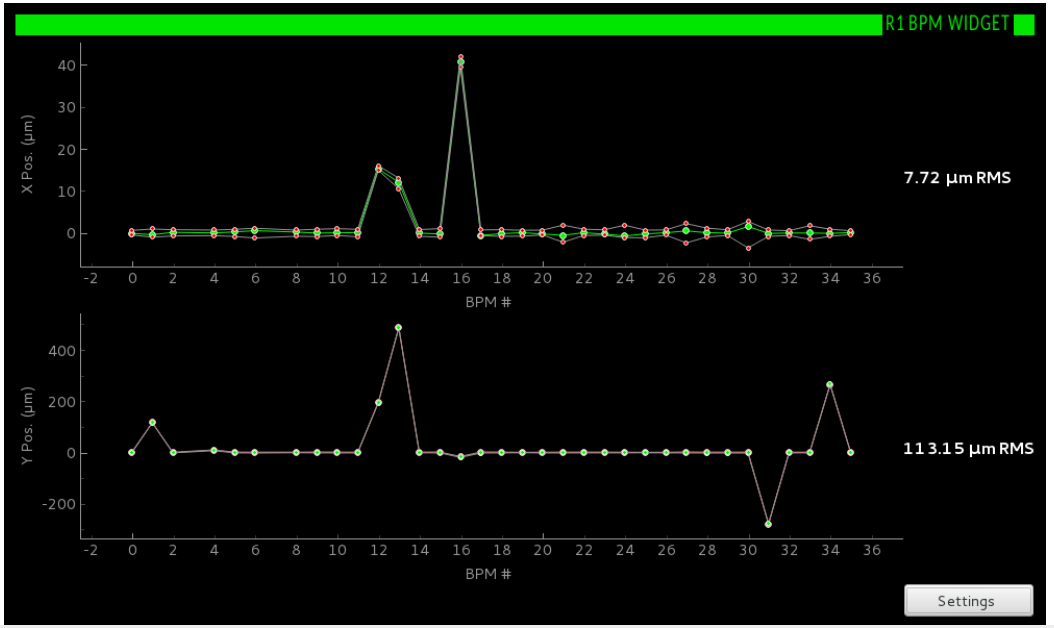
Linac - injection

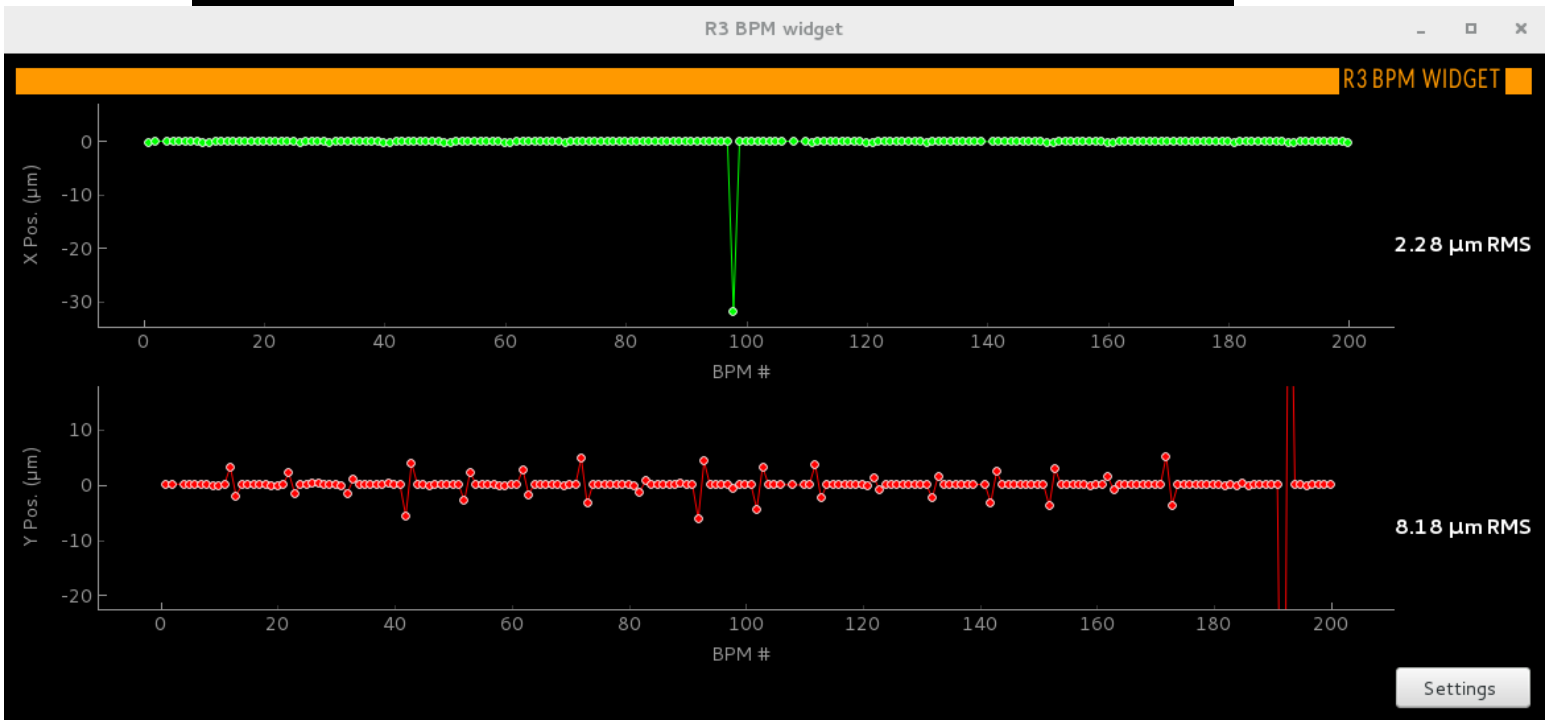


R1 Bunches

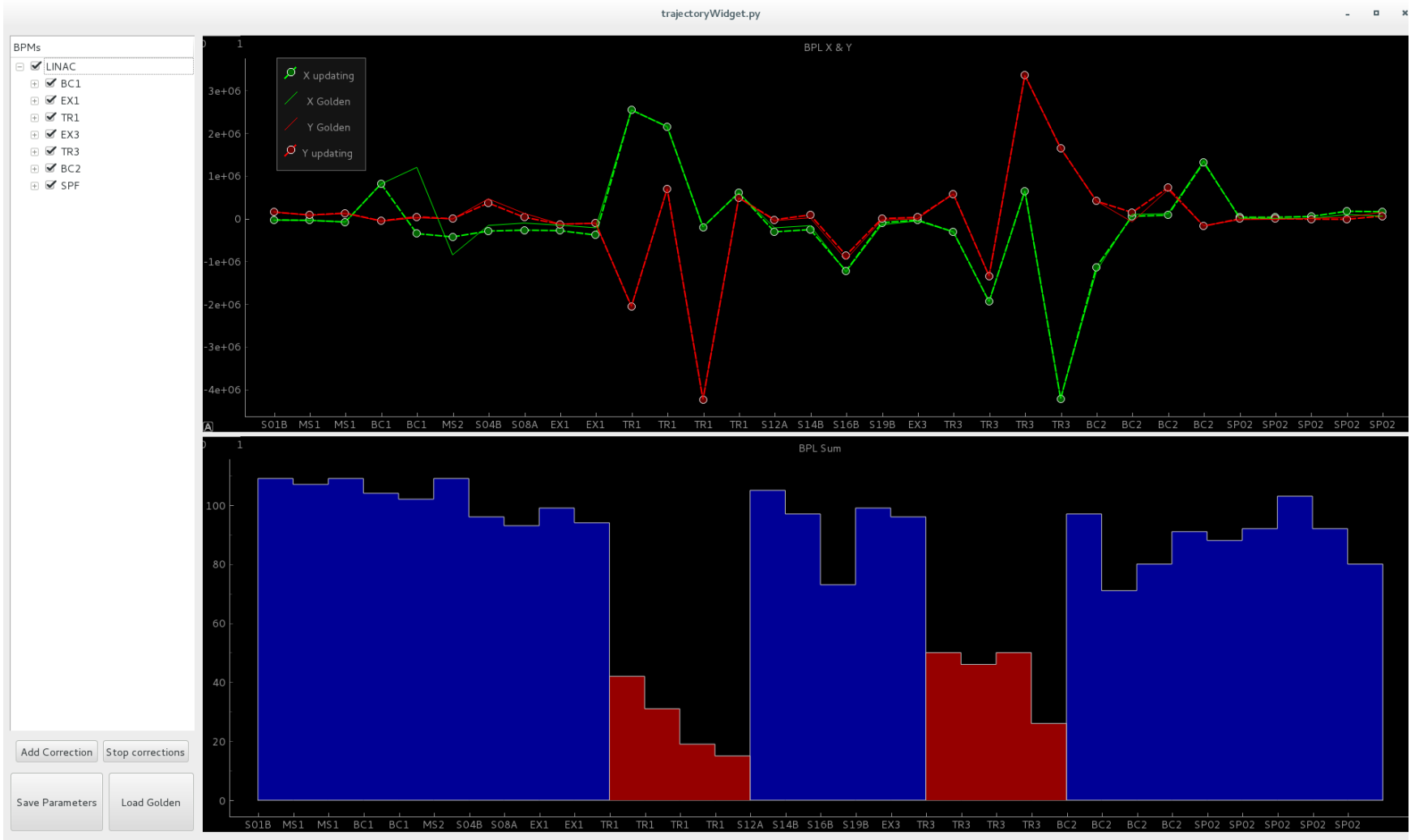


Beam Position Monitors

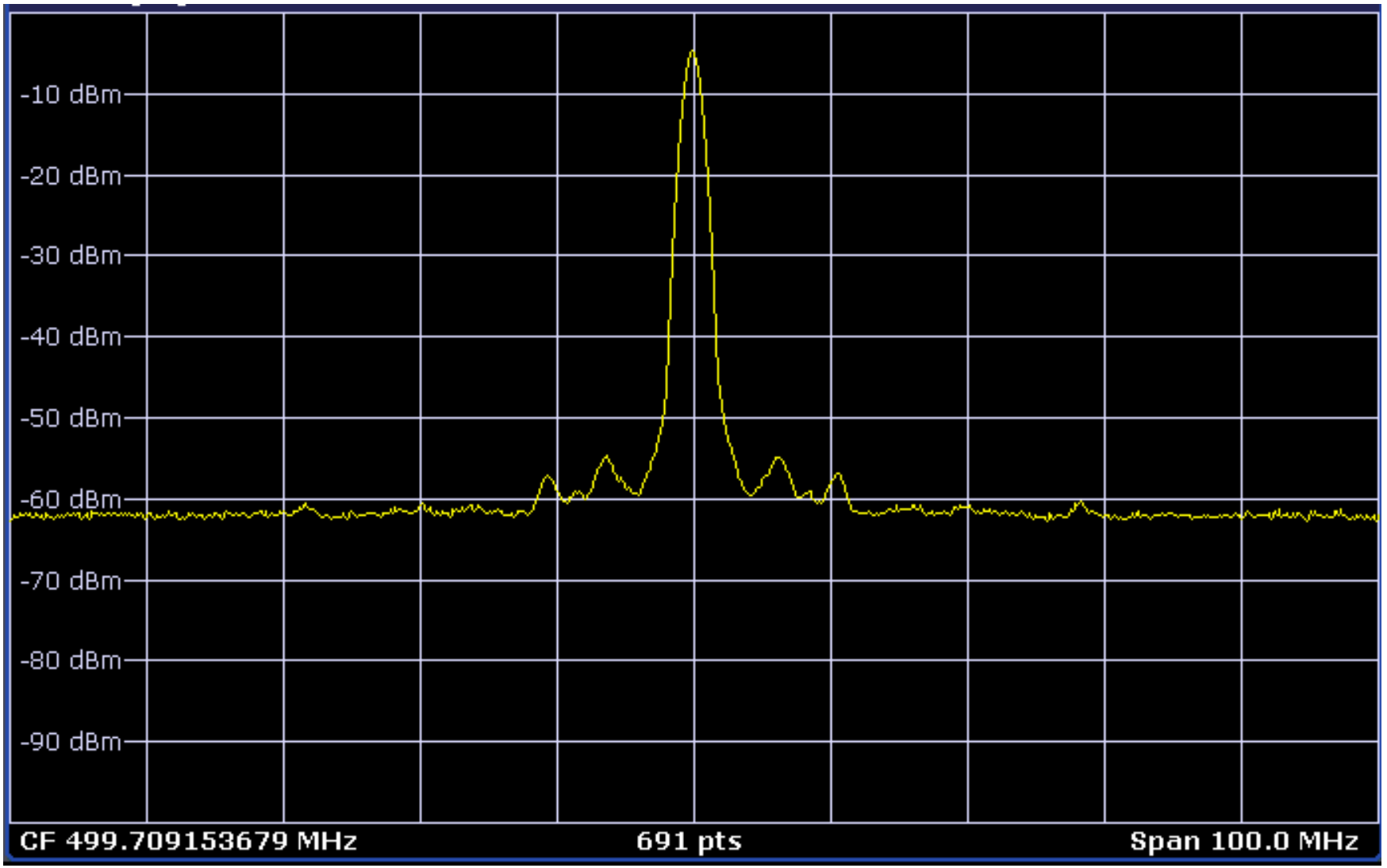




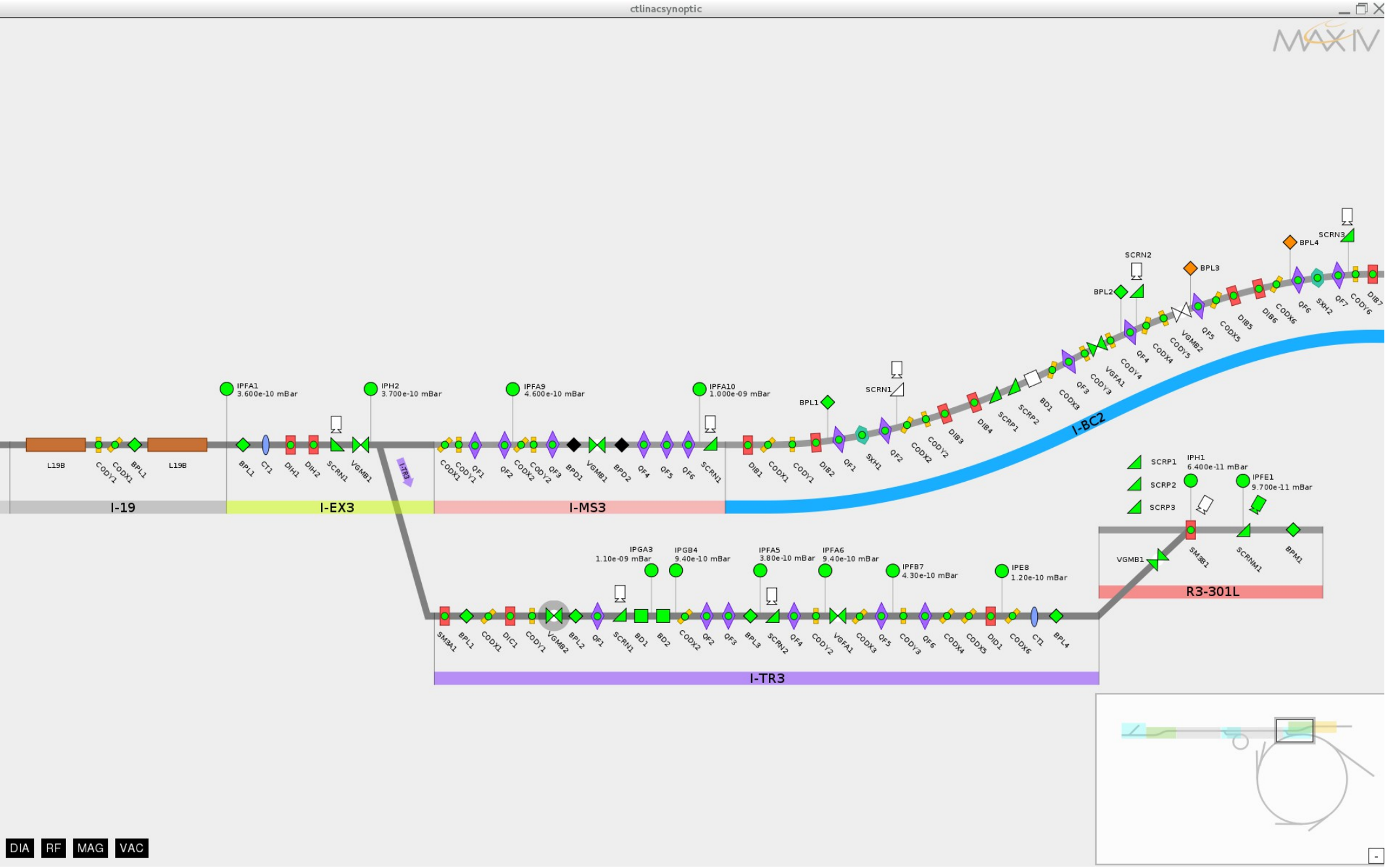
Linac trajectory



Beam Spectrum

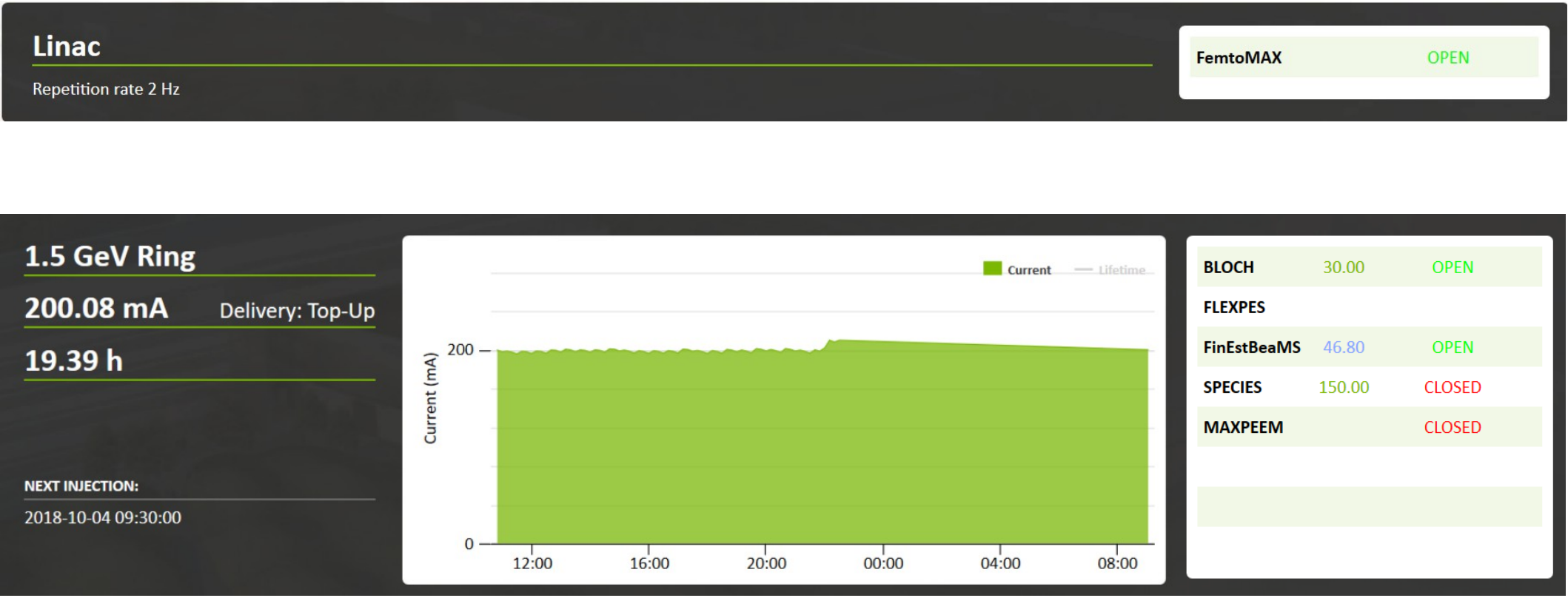


We monitor, control, tune and develop every inch of our accelerators



Beam delivery

- Beam-delivery 24/7
- Day, evening and night shifts
- Beamlines (users) already taking data



Opportunities at MAX IV

- **Vacancies**
- Our recruitment process
- Relocation process
- Compensation & benefits
- Meet our employees

Vacancies

Current vacancies are listed here. We also advertise vacant positions on the Lund University web site. We hope you will find a position that matches your qualifications and interests, and welcome your application.

Opportunities at MAX IV

- Most positions require experience
- Machine division most natural fit for particle physicists:
- Accelerator development
- Accelerator operations, beam diagnostics (e.g. beam conditions monitoring experience in ATLAS, control room shifts, etc)
- Radiation shielding: skills with MC particle transport codes (Geant4, FLUKA)
- Programming skills (development of GUIs, python: we develop our own tools)
- End of October more clarity on numbers, but new vacancies will appear
- We're part of Lund University

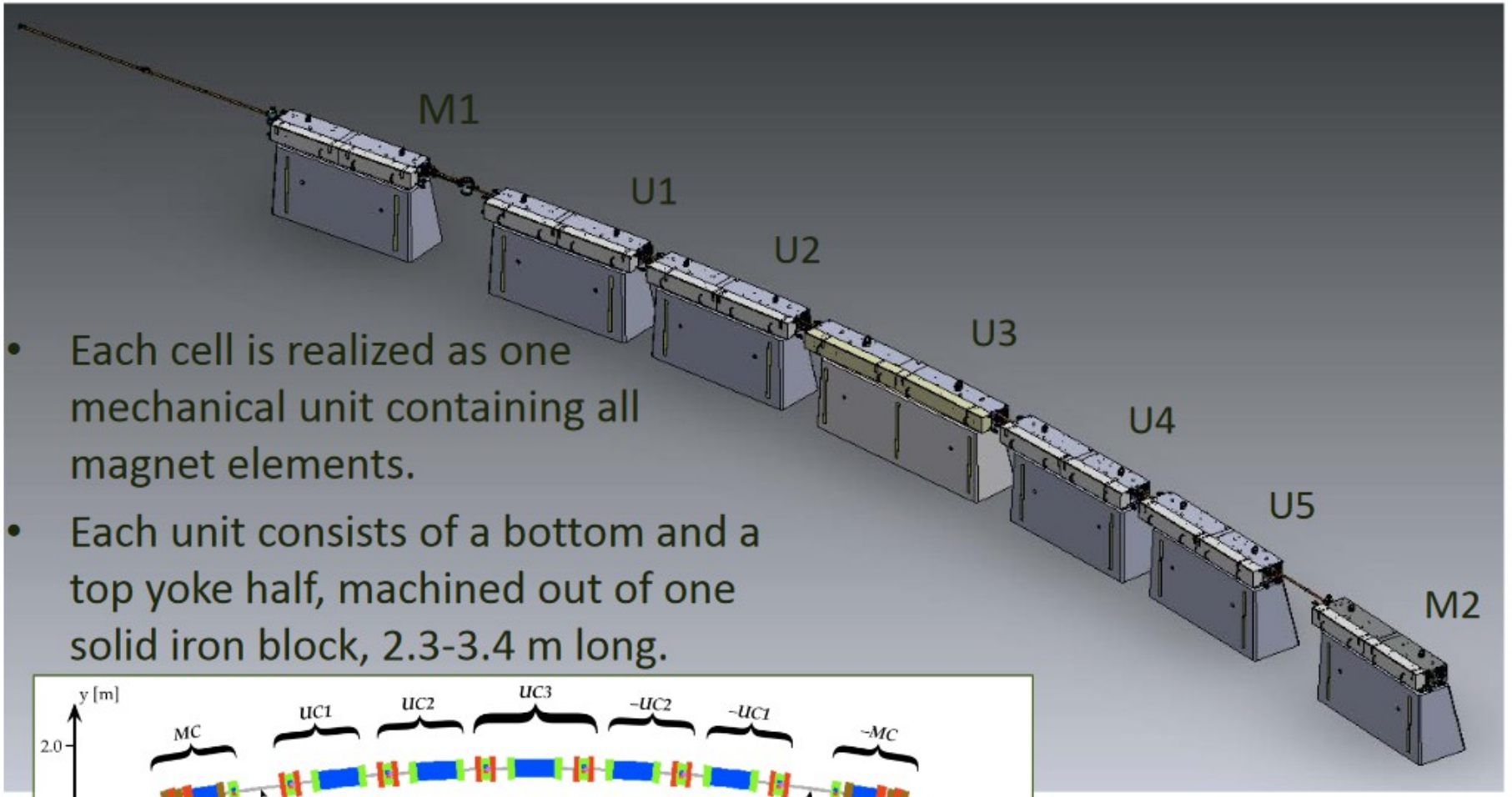
LUNDS UNIVERSITET

MAX IV

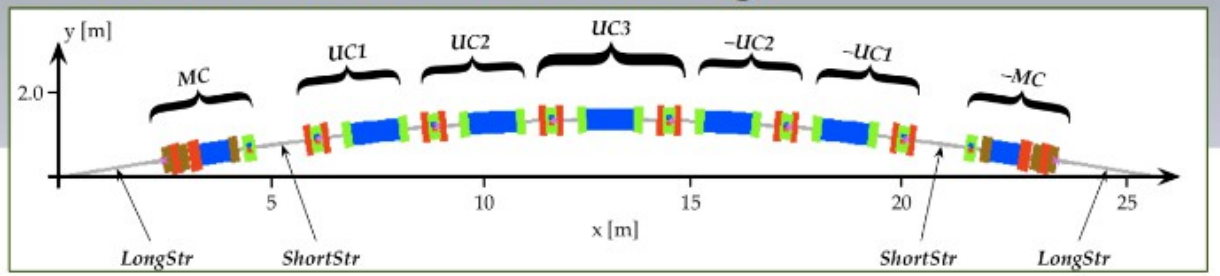
Thanks

Backup

achromat 3D cad assembly:

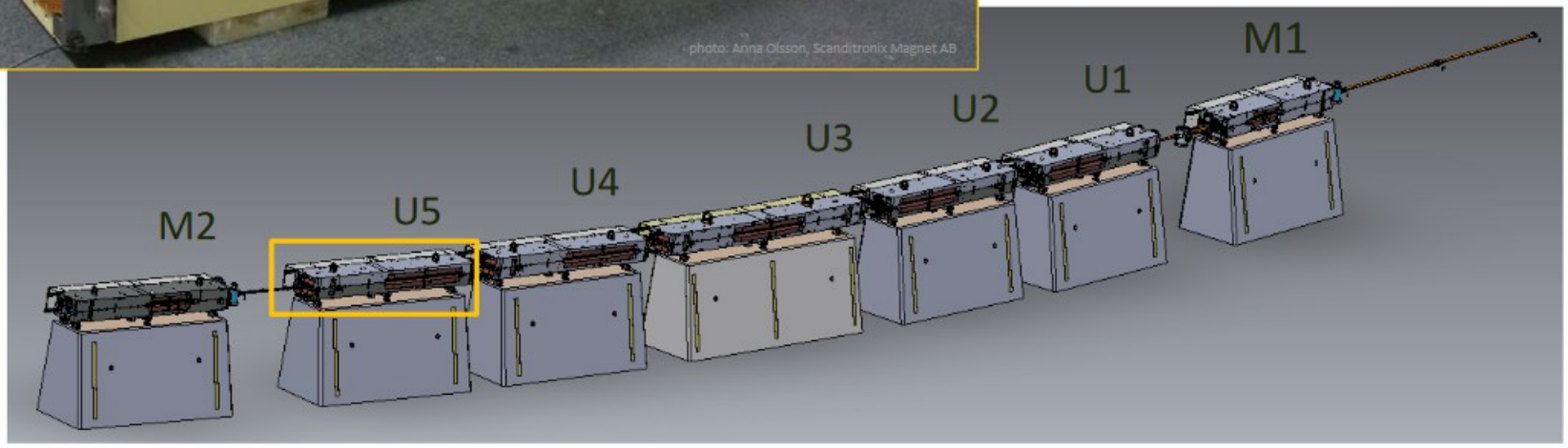


- Each cell is realized as one mechanical unit containing all magnet elements.
- Each unit consists of a bottom and a top yoke half, machined out of one solid iron block, 2.3-3.4 m long.



a MAX IV magnet block:

- a U5 bottom half →
- ↓ an assembled U5



Linac time structure