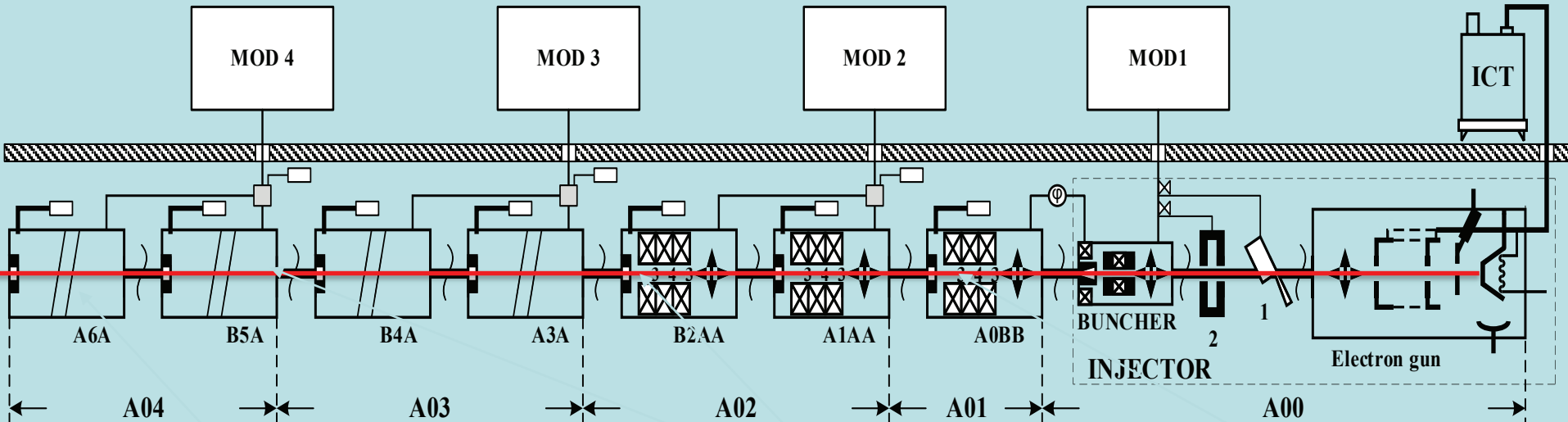


Linear electron accelerator LINAC-200. State of works and prospects.

V. Kobets

JINR

Linac-200 Parameters



- Existing extraction point
- $E = 40\text{--}200\text{ MeV}$
- $I_{\text{peak}} = 40\text{ mA}$

- In future:
 - 25 sections
 - 800 MeV energy

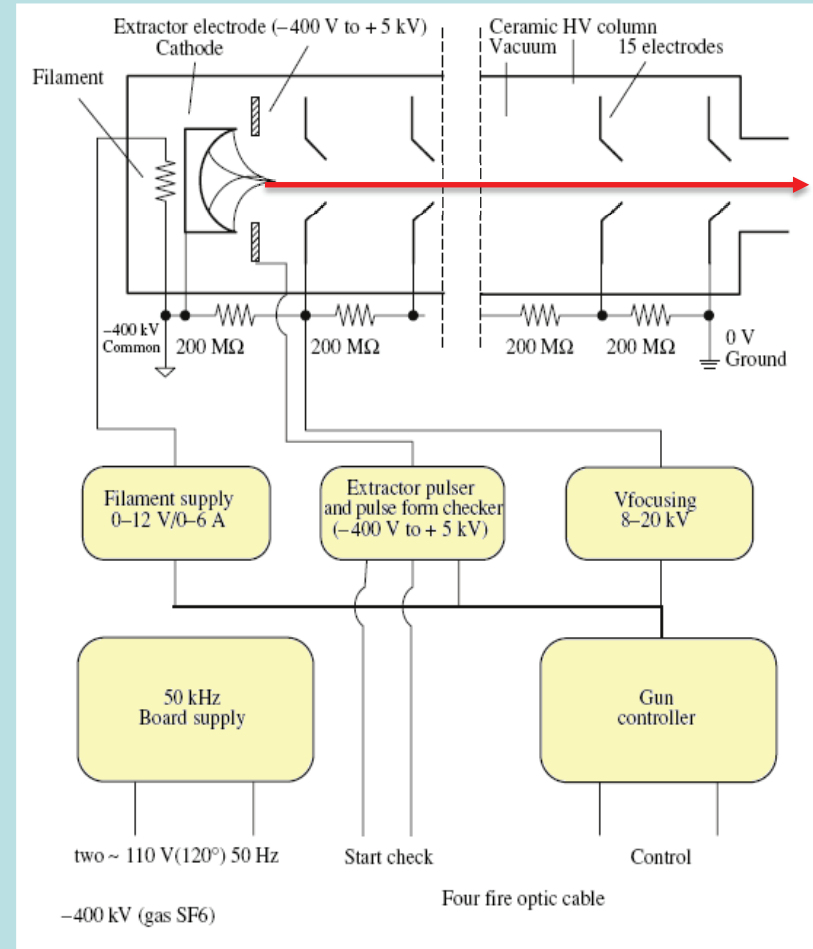
- Future extraction points
- Estimated energy:
 - 60–70 MeV after B2AA
 - 120–130 MeV after B4A
- Peak current:
 - 60 mA after B2AA
 - 50 mA after B4A

- Existing extraction point
 - For users
 - For students
- $E = 5\text{--}25\text{ MeV}$
- $I_{\text{peak}} = 60\text{ mA}$
- $\tau = 0.1\text{--}3.5\text{ }\mu\text{s}$
- $f = 1\text{--}25\text{ Hz}$



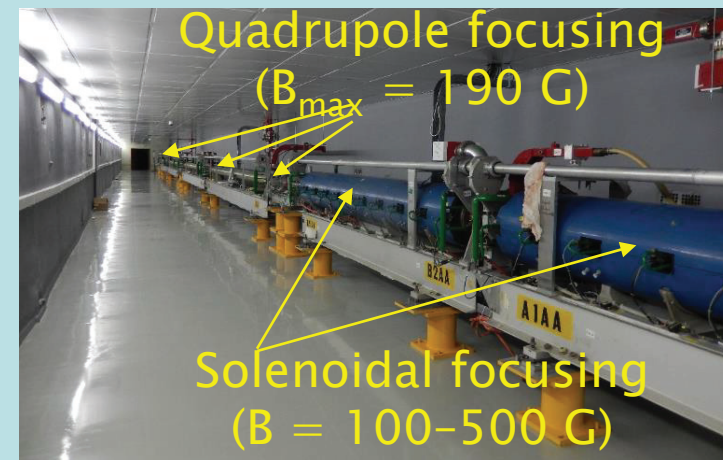
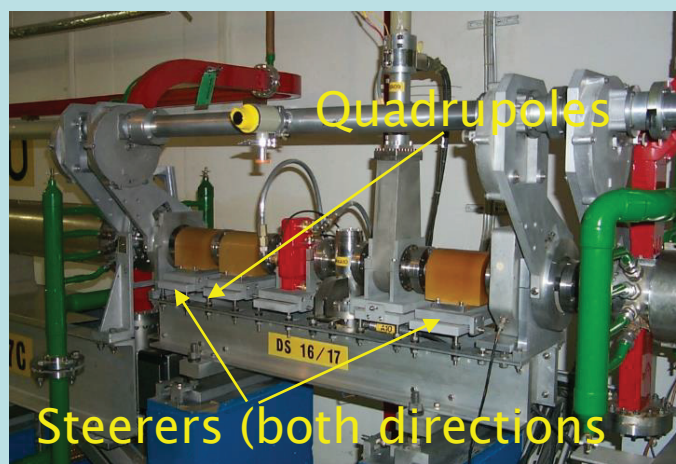
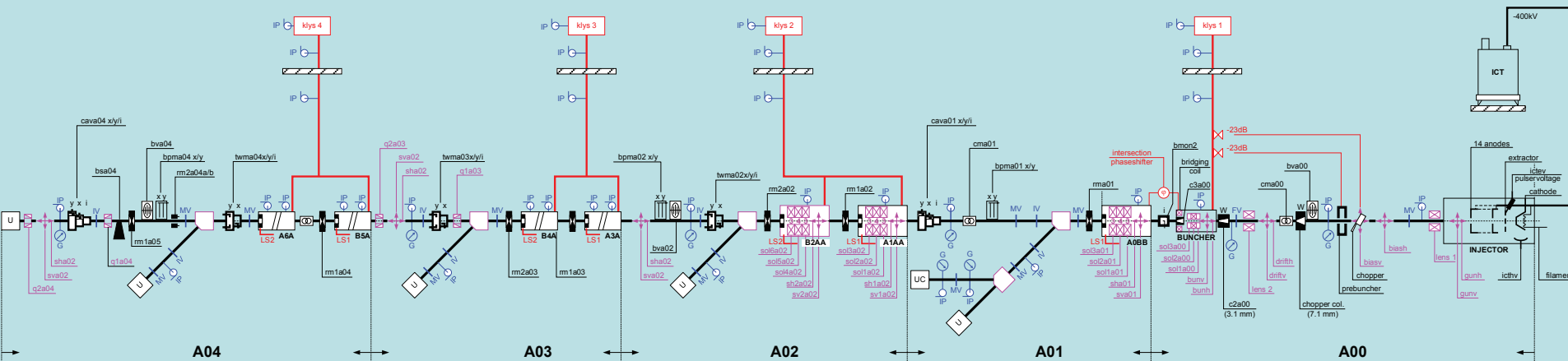
- Major building renovation is ongoing
- Startup is foreseen in the end of 2021
- We are open for users!

Electron Gun



Electron beam energy, keV	400
Pulse duration, μ s	0.1-50
Peak current, mA	200

Technological devices



Lens 1 — 50 G, Lens 2 — 100 G, solenoids — 100–500 G

Quadrupoles: 190 G, aperture — 2,5 cm, gradient — 7,6 kG/m, max. current — 3 A, voltage — 36 v

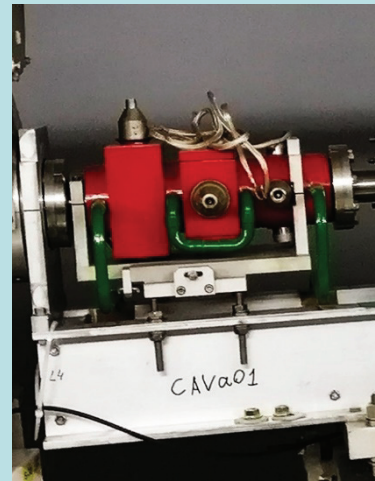
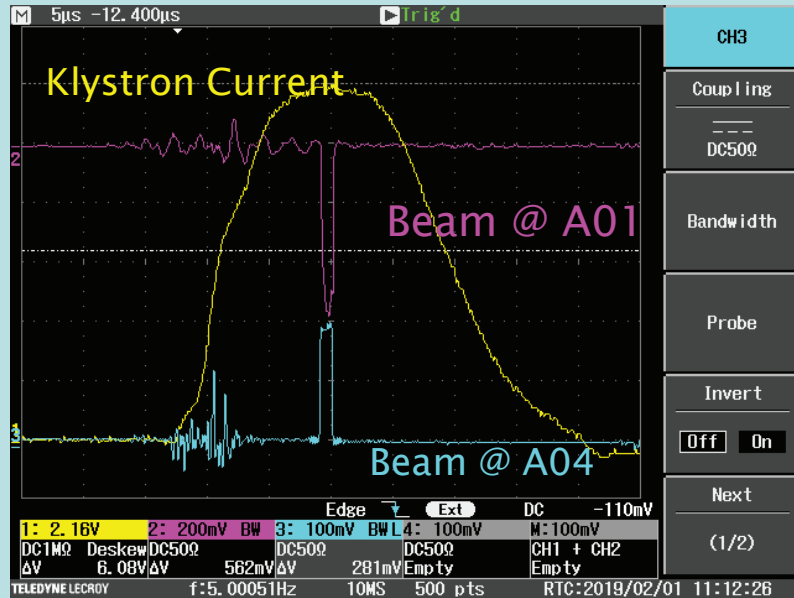
Steerers: 50 G, length — 10 cm, max. current — 3 A, voltage — 10 V

- Forepumping: mobile pumping stations (scroll & turbo pumps)

- Operation pumping: ion pumps (Varian from MEA, gradually replaced by Agilent)

Vacuum in different accelerator systems, Torr	
Gun	8×10^{-8}
Accelerating sections	$(1-5) \times 10^{-8}$
Drift spaces	5×10^{-8}
Buncher	1×10^{-8}
RF waveguides	8×10^{-8}

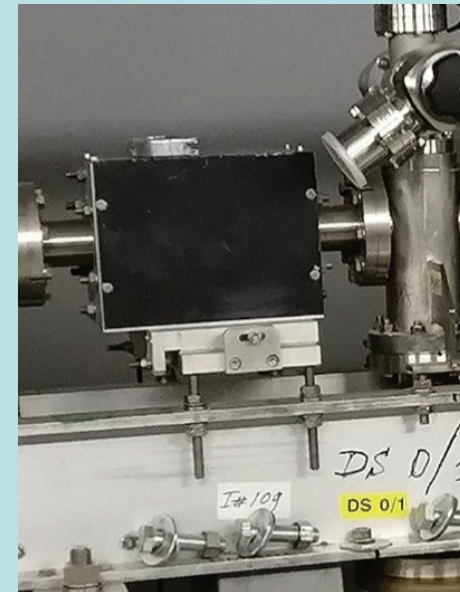
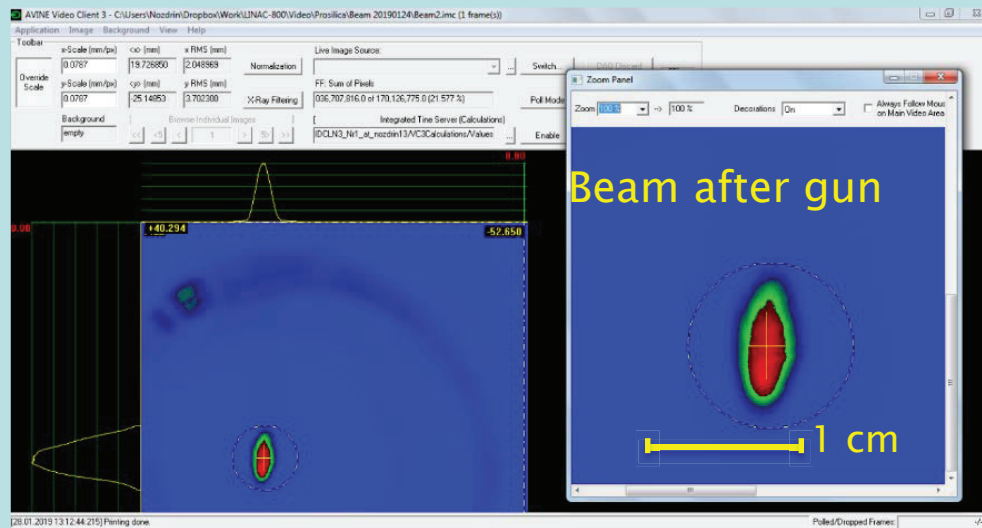
Diagnostics



Cavity monitor

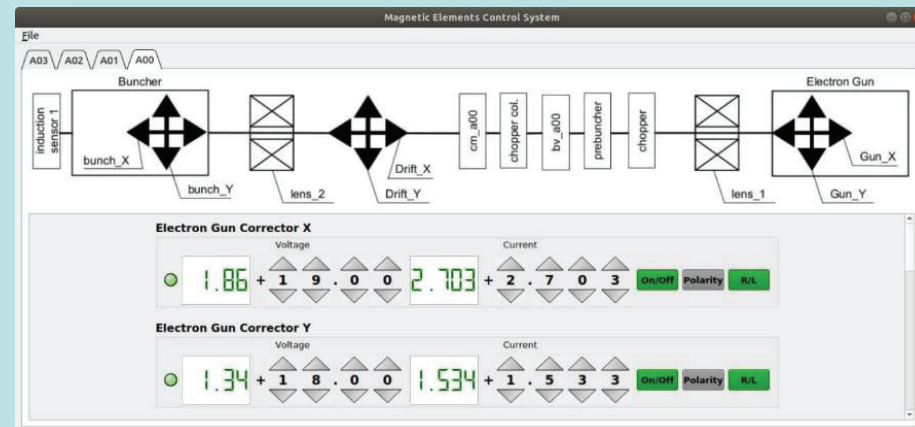
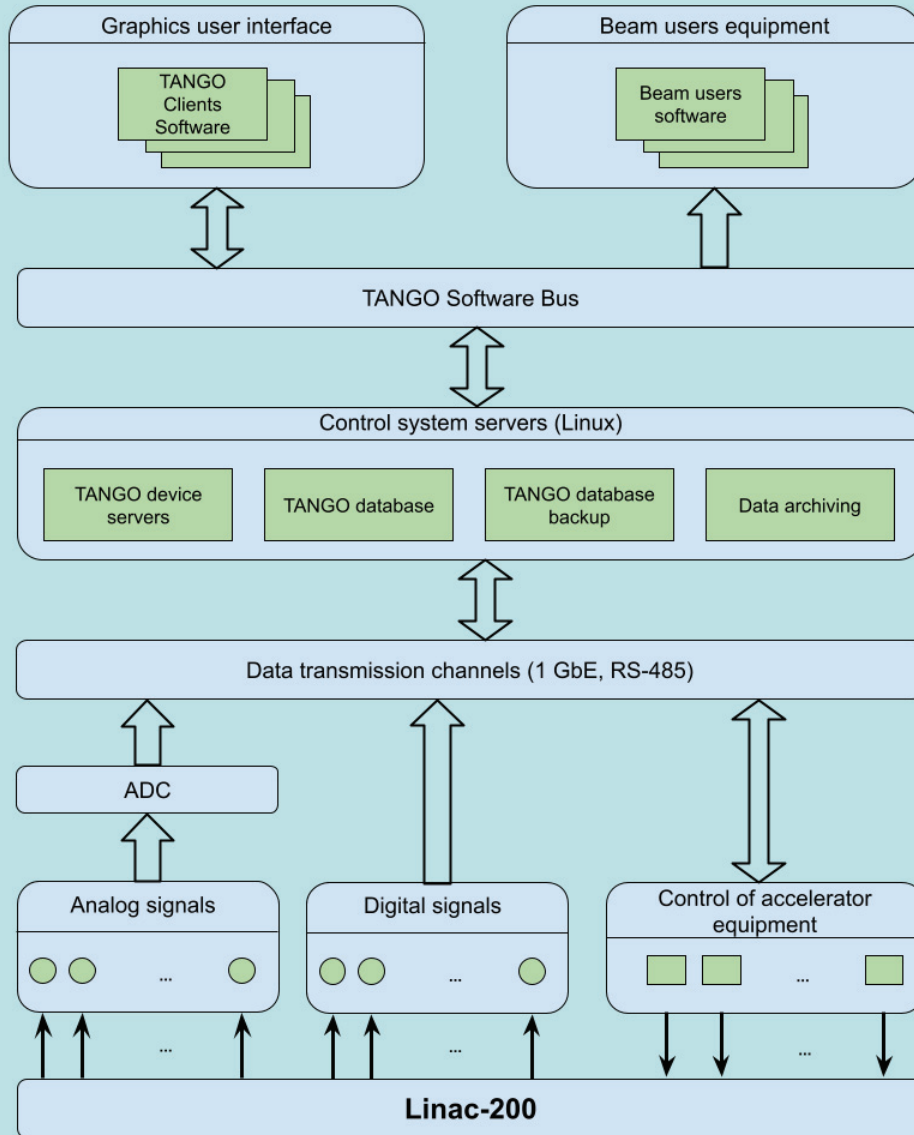


Traveling wave monitor



Current monitor

Controls

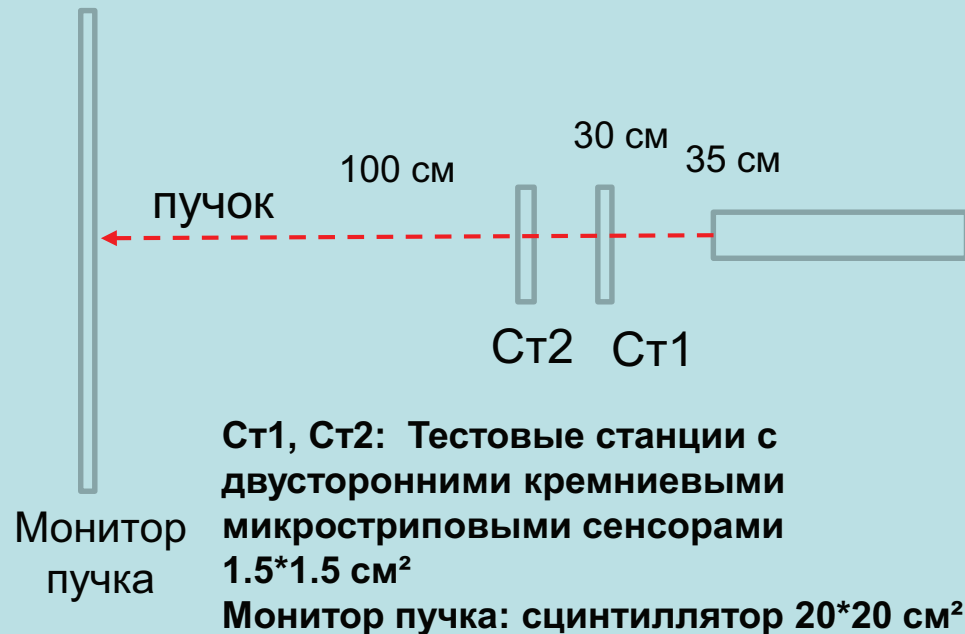
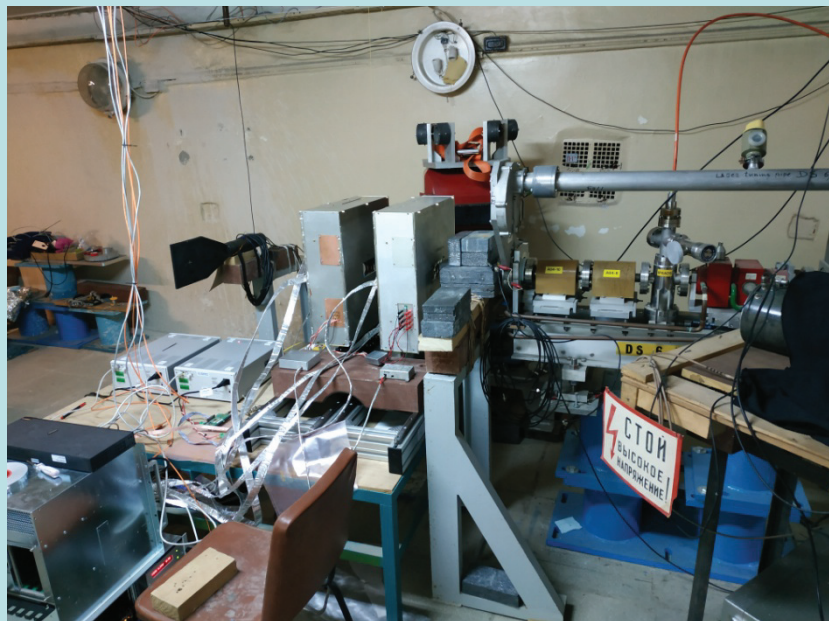


Education program: Training section

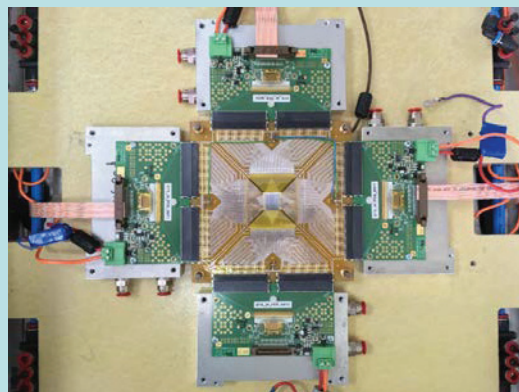
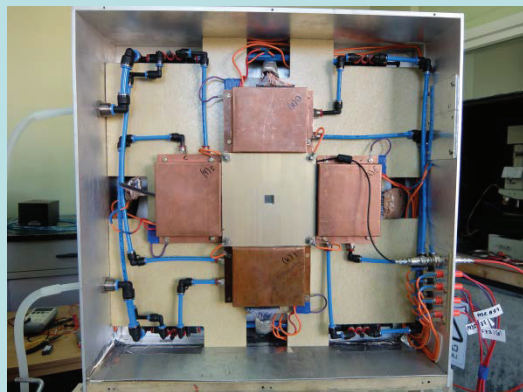
- Vacuum technology
- Accelerator equipment (magnets, diagnostics, ...)
- Beam dynamics
- Advanced electronics (preamplifiers etc.)
- Controls & automation
- Particle detectors
- Dosimetry
- and much more...



Схема тестового стенда



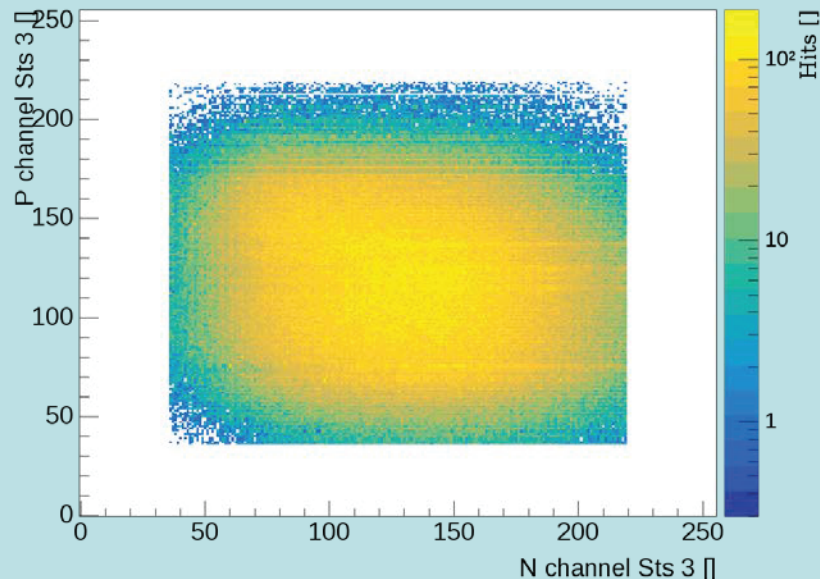
Ст1, Ст2: Тестовые станции с
двусторонними кремниевыми
микростриповыми сенсорами
 $1.5 \times 1.5 \text{ см}^2$
Монитор пучка: сцинтиллятор $20 \times 20 \text{ см}^2$



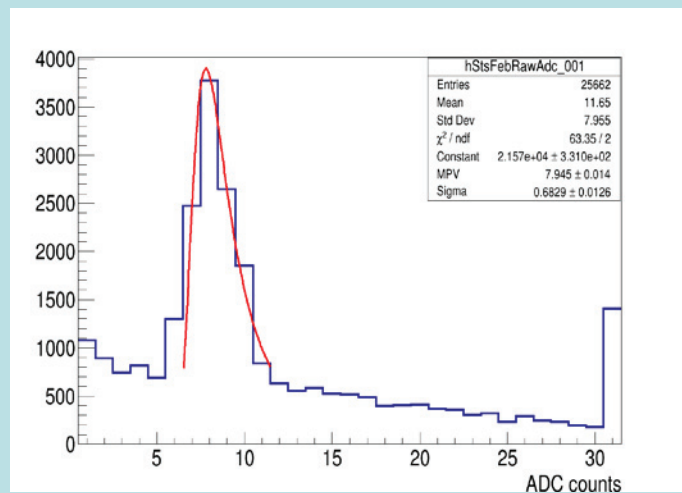
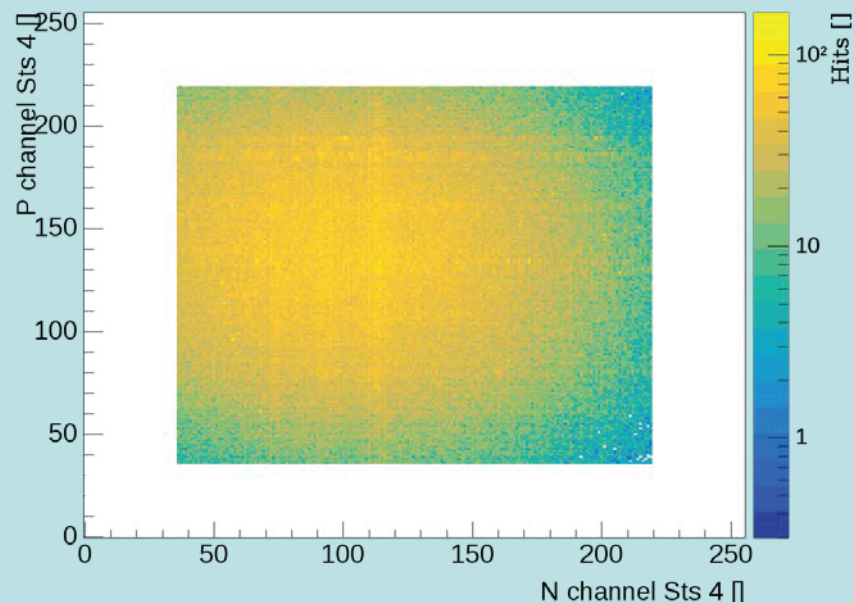
Параметры сенсоров:

Толщина 300 мк
Ширина стрипа 58 мк
Угол между стрипами 90°

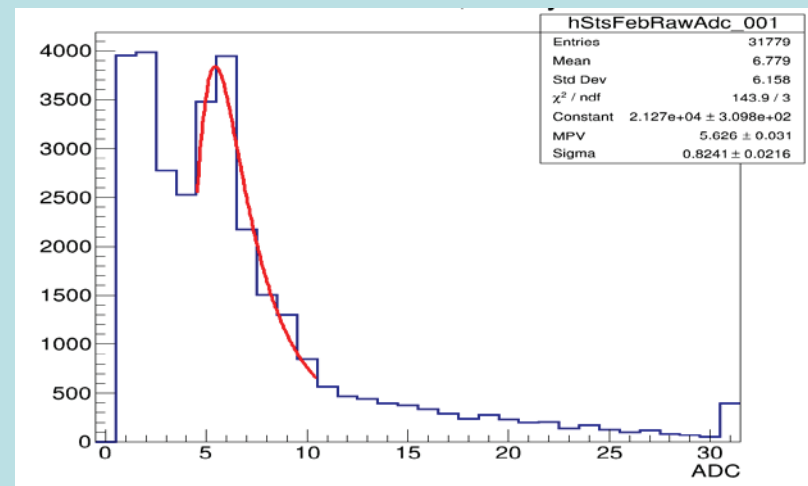
Sorted hits in coincidence for Sts 3 axis N and P



Sorted hits in coincidence for Sts 4 axis N and P



Профиль пучка в первой станции
Энергия 150 МэВ



Профиль пучка во второй станции
Энергия 150 МэВ



Thank you for attention