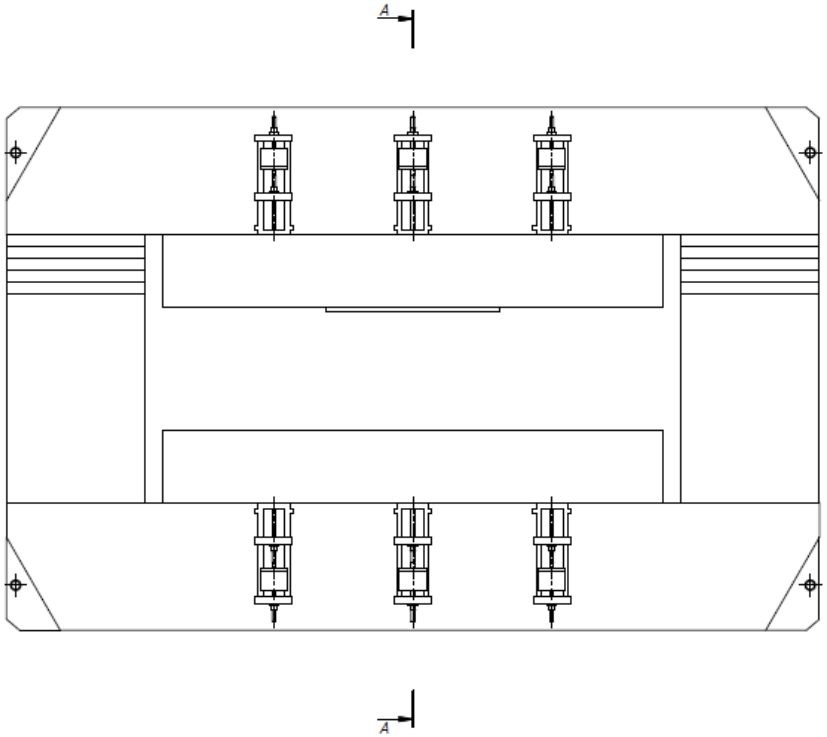
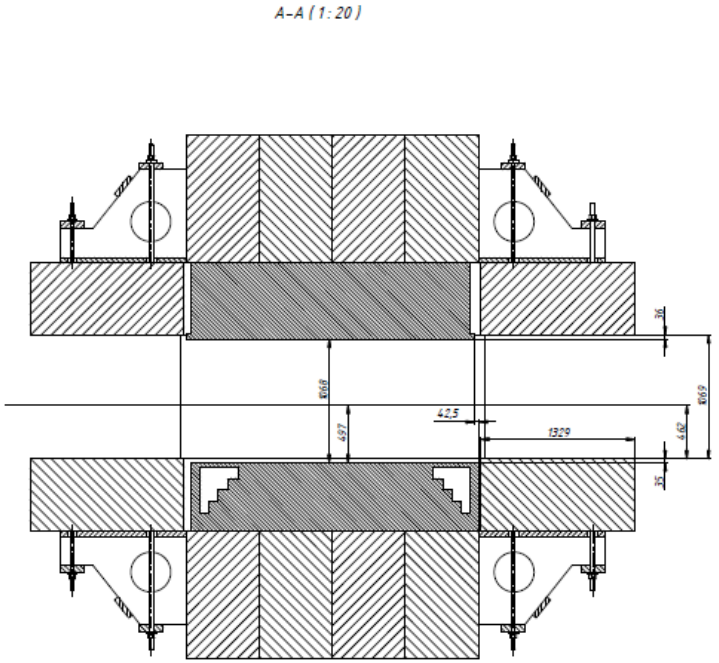
Detector configuration in the SP-41 magnet. Target station design.

Piyadin S.M.

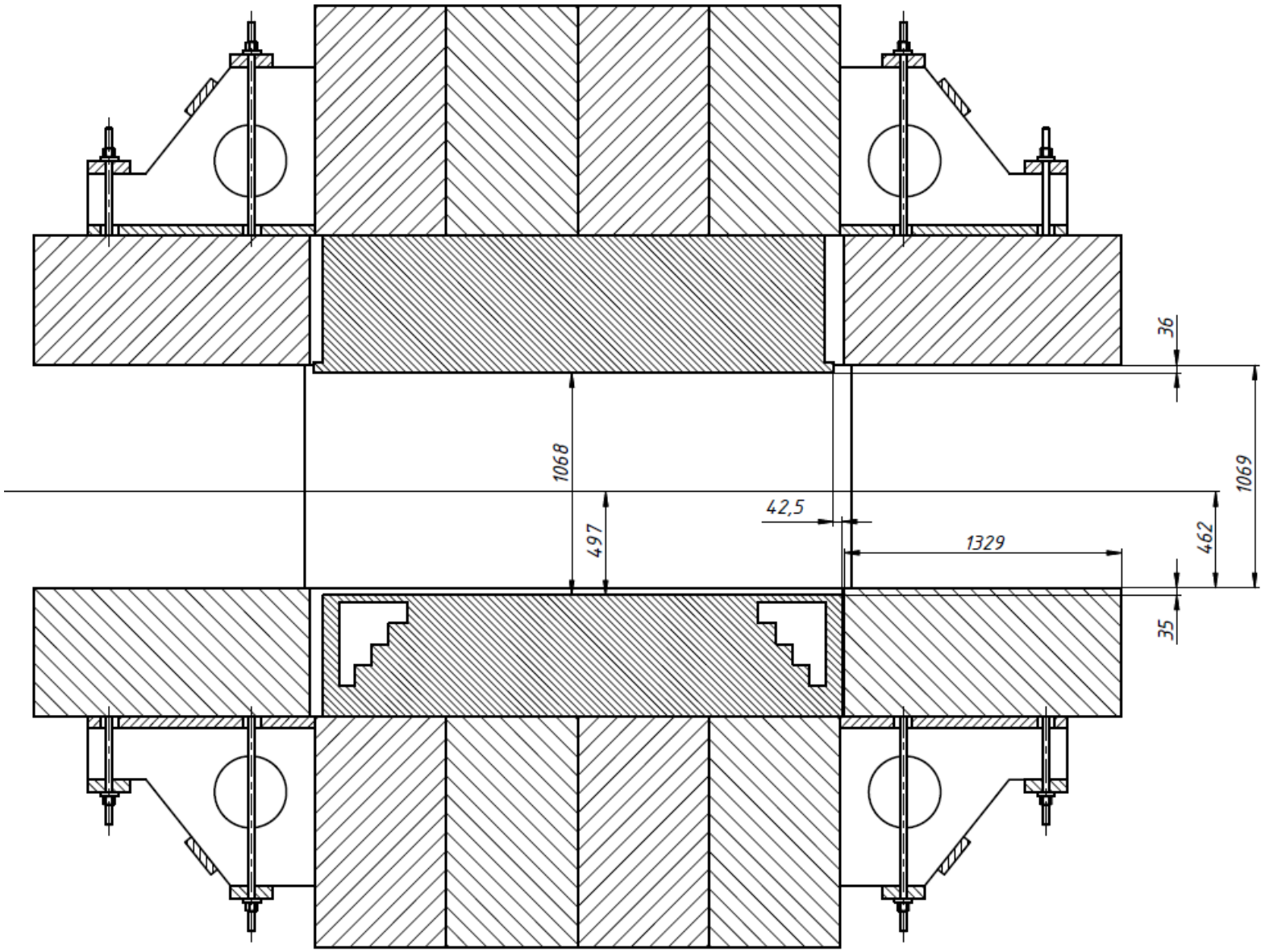
SP-41 magnet



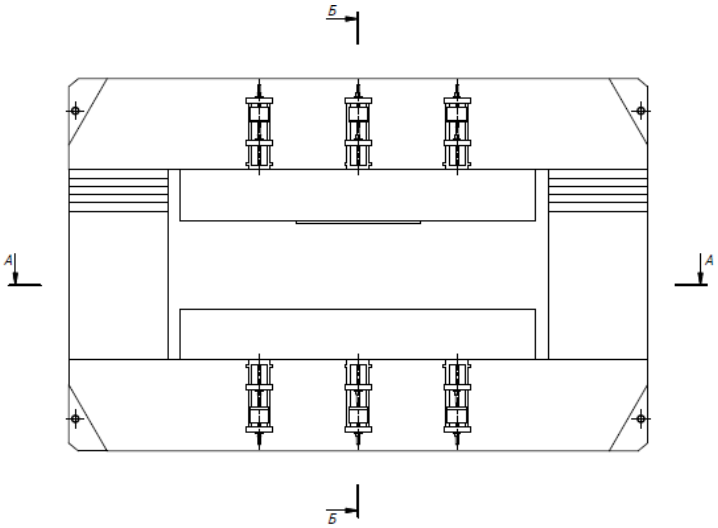


Magnet SP-41:
Maximal magnetic field value ~ 1 T
Maximal current value = 1900 A
Maximal value of the current source = 2500A
Cooling: water

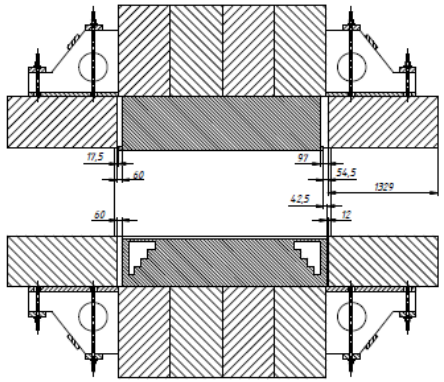
SP-41 magnet



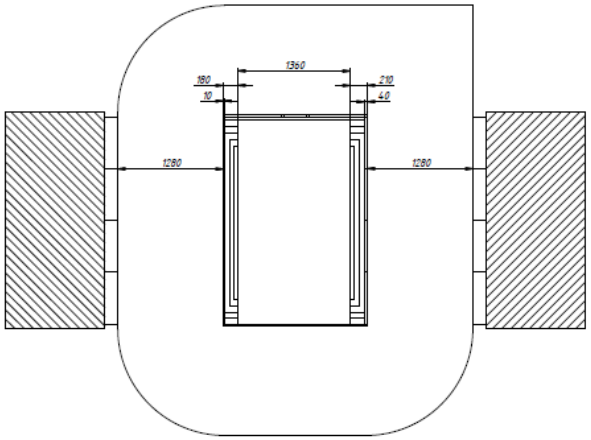
SP-41 magnet



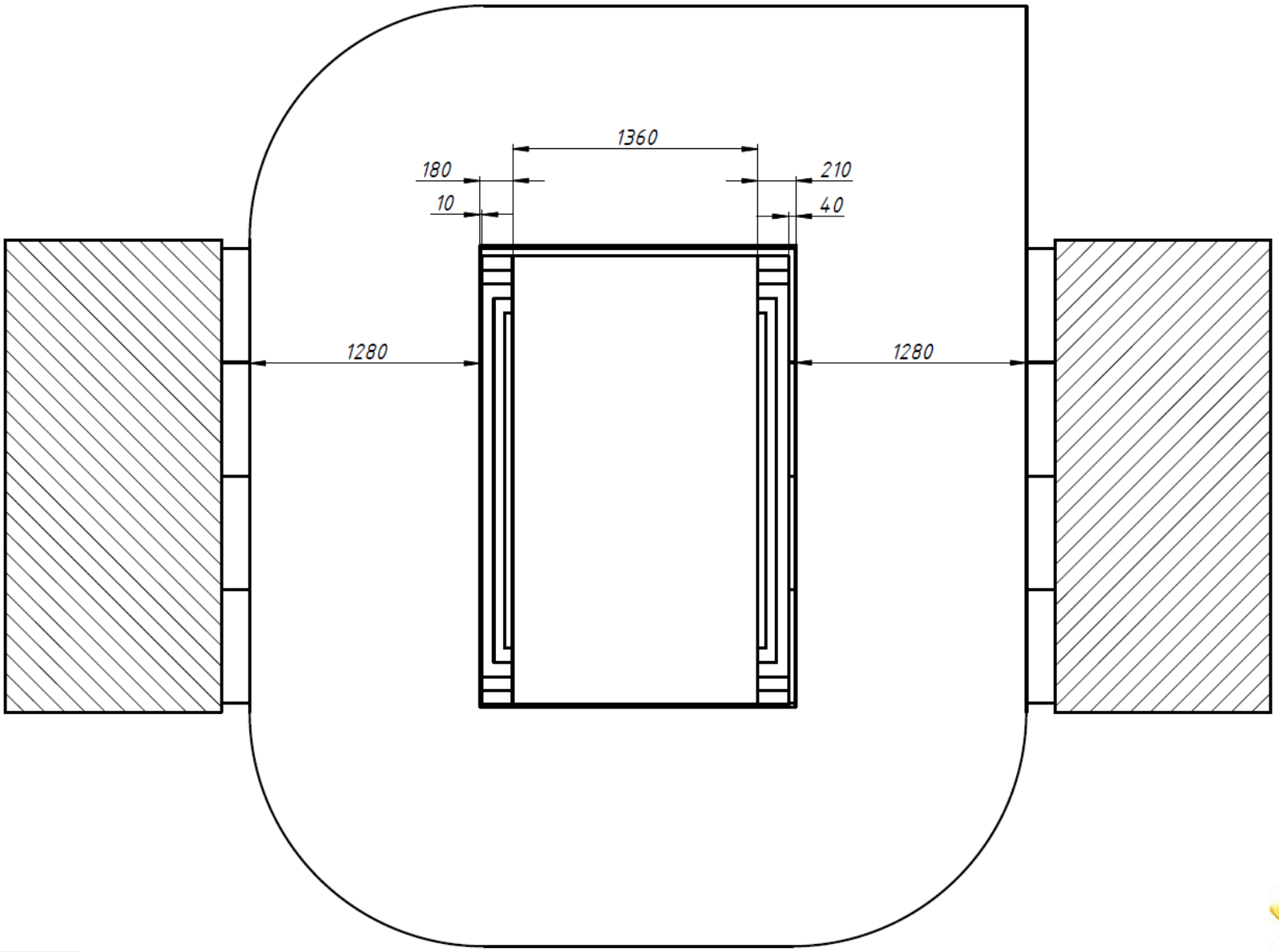
Б–Б (1 : 25)



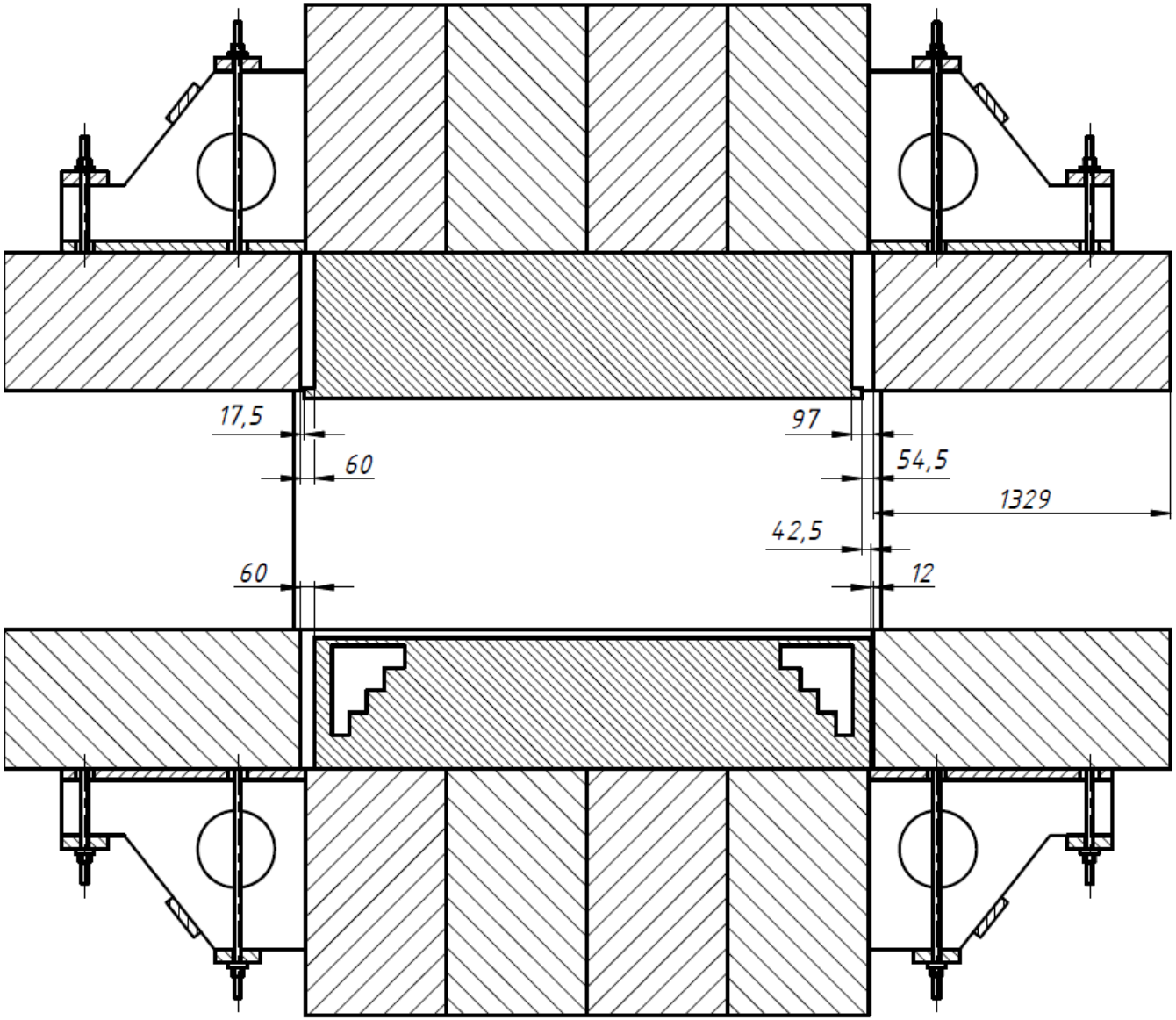
А–А (1 : 25)



SP-41 magnet



SP-41 magnet

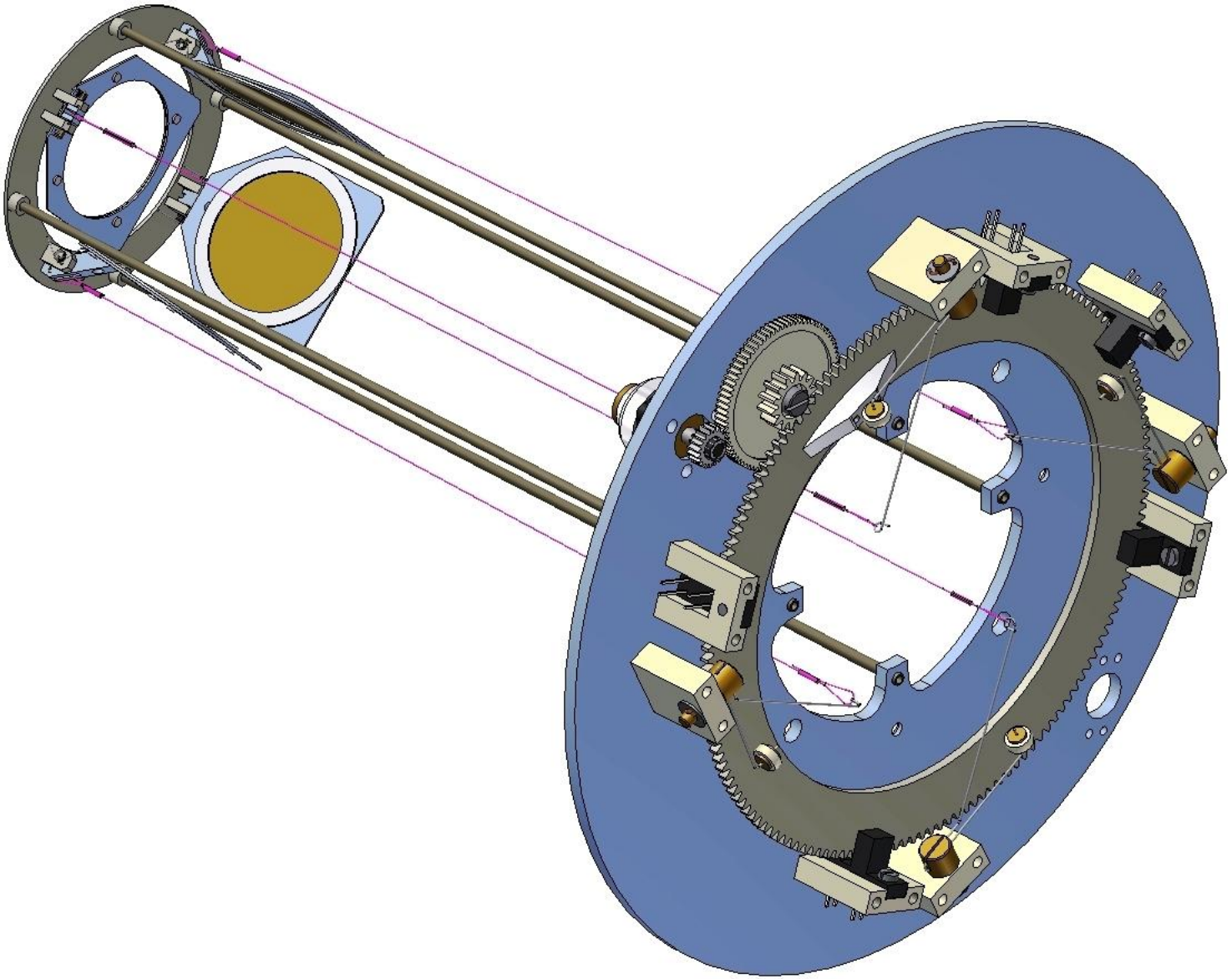


Target station

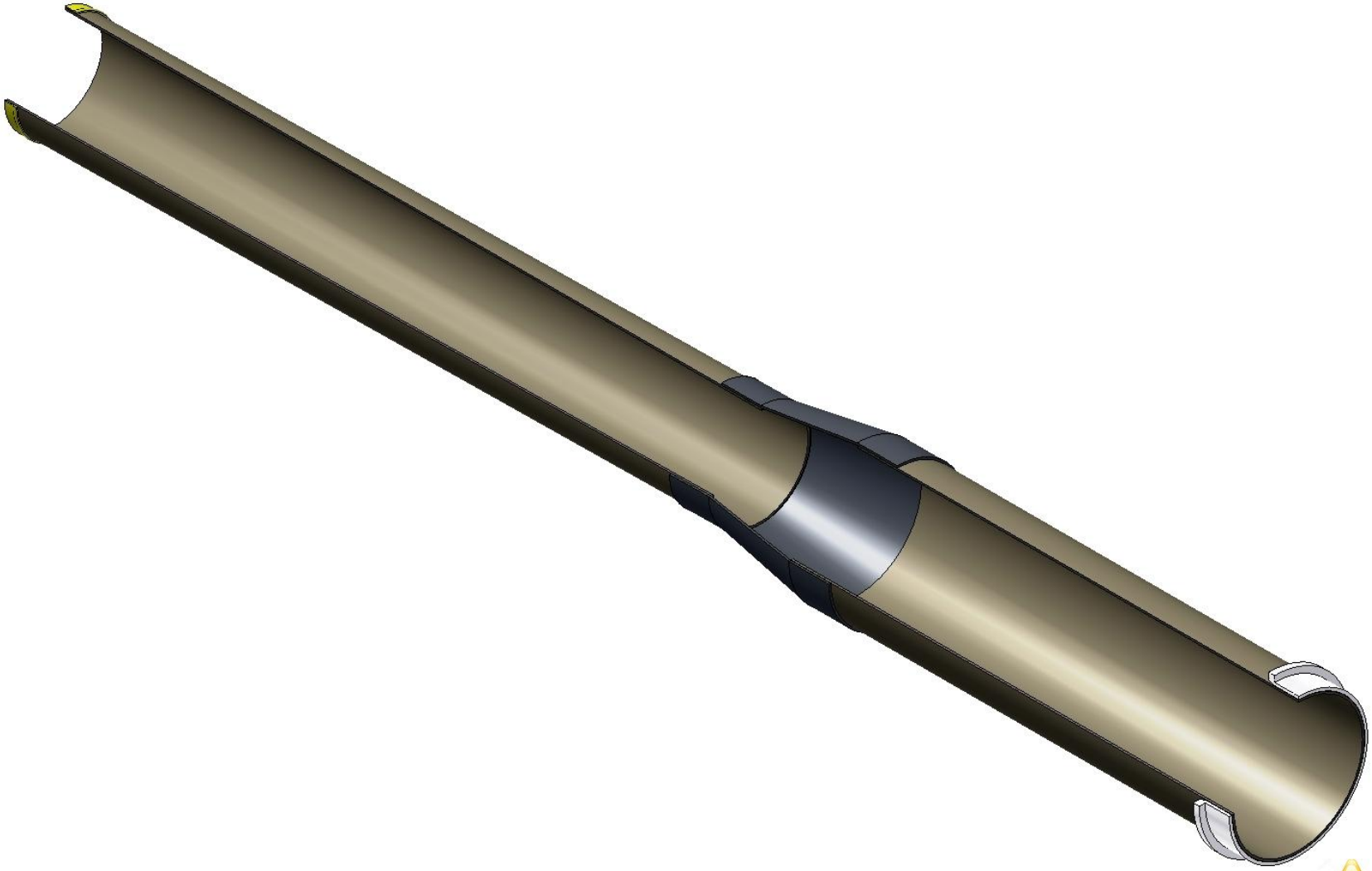
Target station:

3 different target types with d = 30mm
and 1 empty target are available for data taking and background evaluation;
Drive: Electro-mechanical;
Control: remote;
Target elements: non-magnetic materials;
Control of the target position: opto-isolator KTIR0411S (5 pc).
Operation in vacuum and magnetic field.

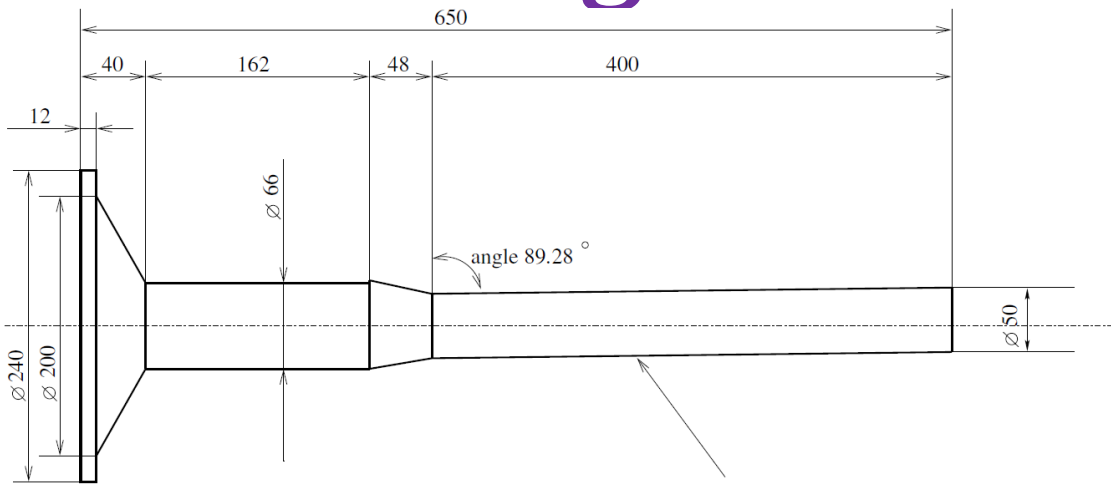
Target station

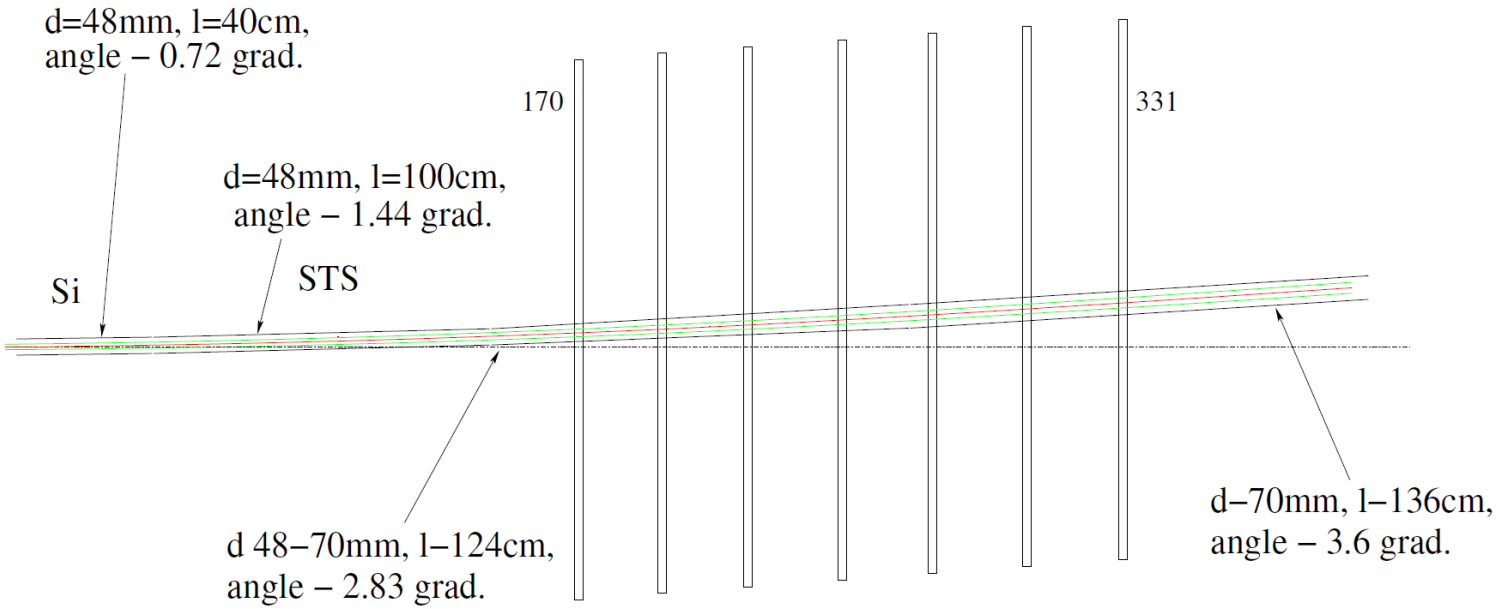


Target station

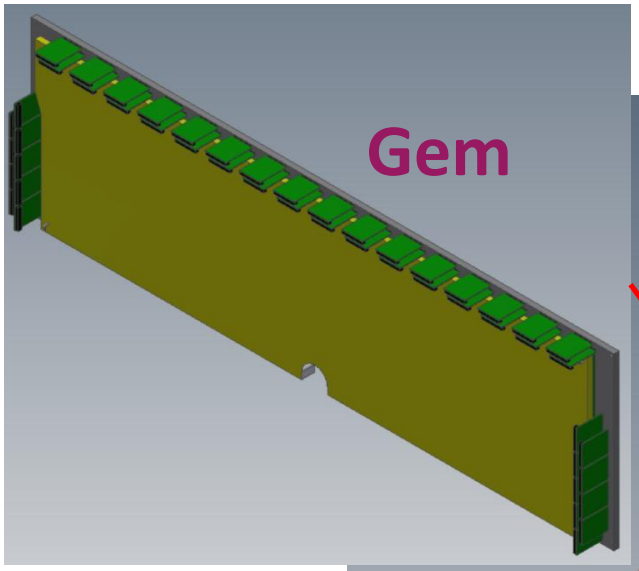


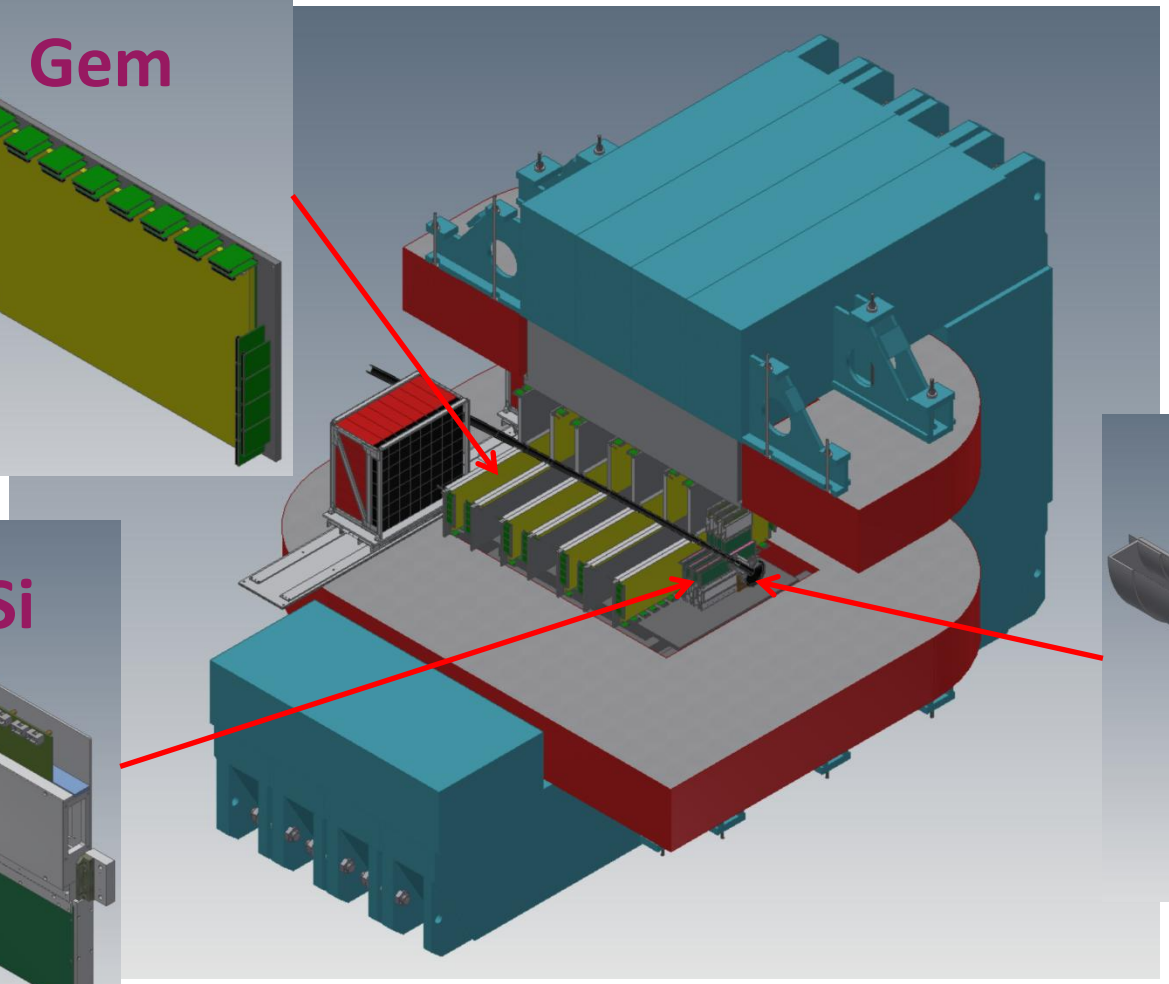
Beam pipe inside the SP-41 magnet

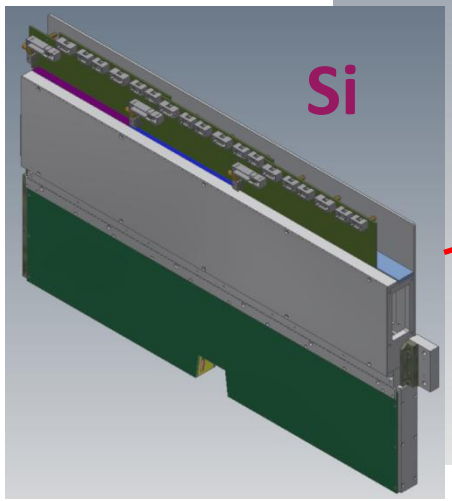




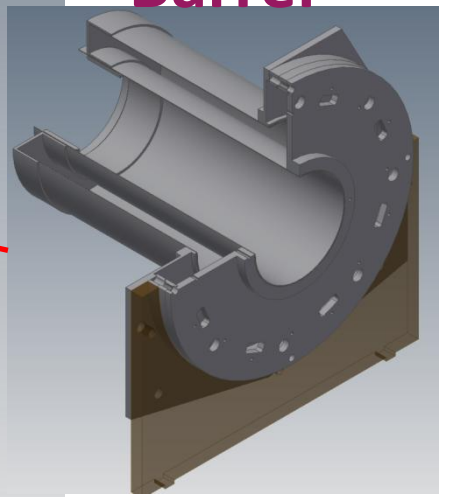
3D model of the tracking detectors installation in the SP-41 magnet



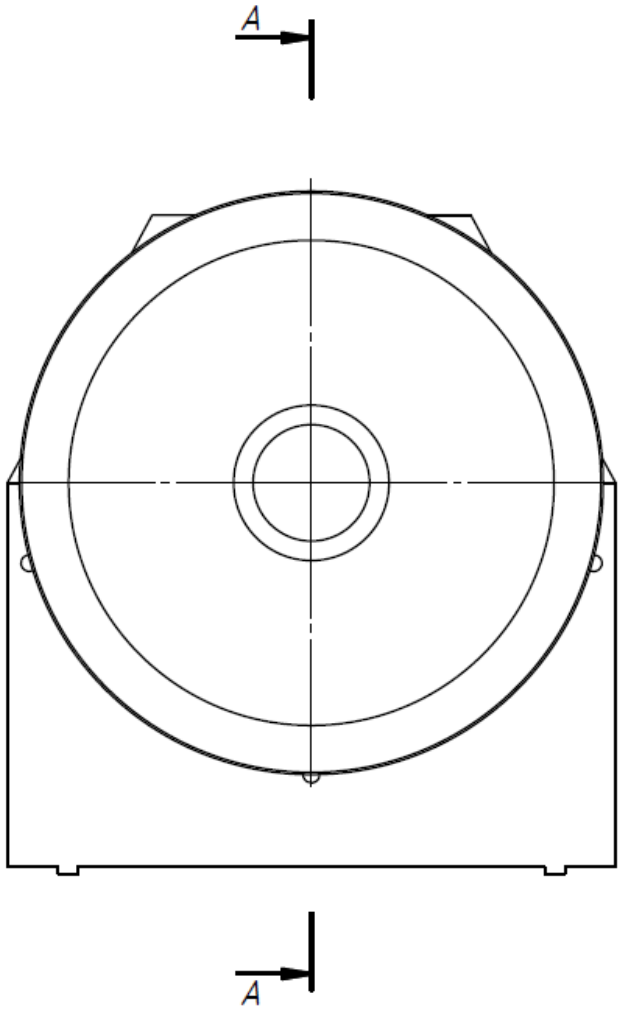


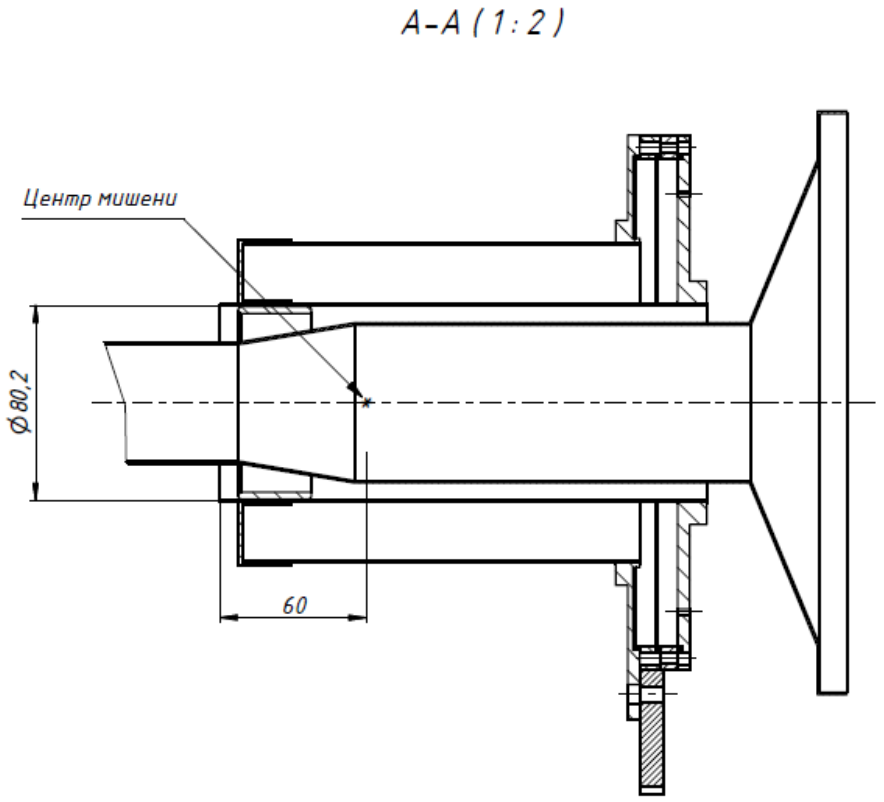


Barrel

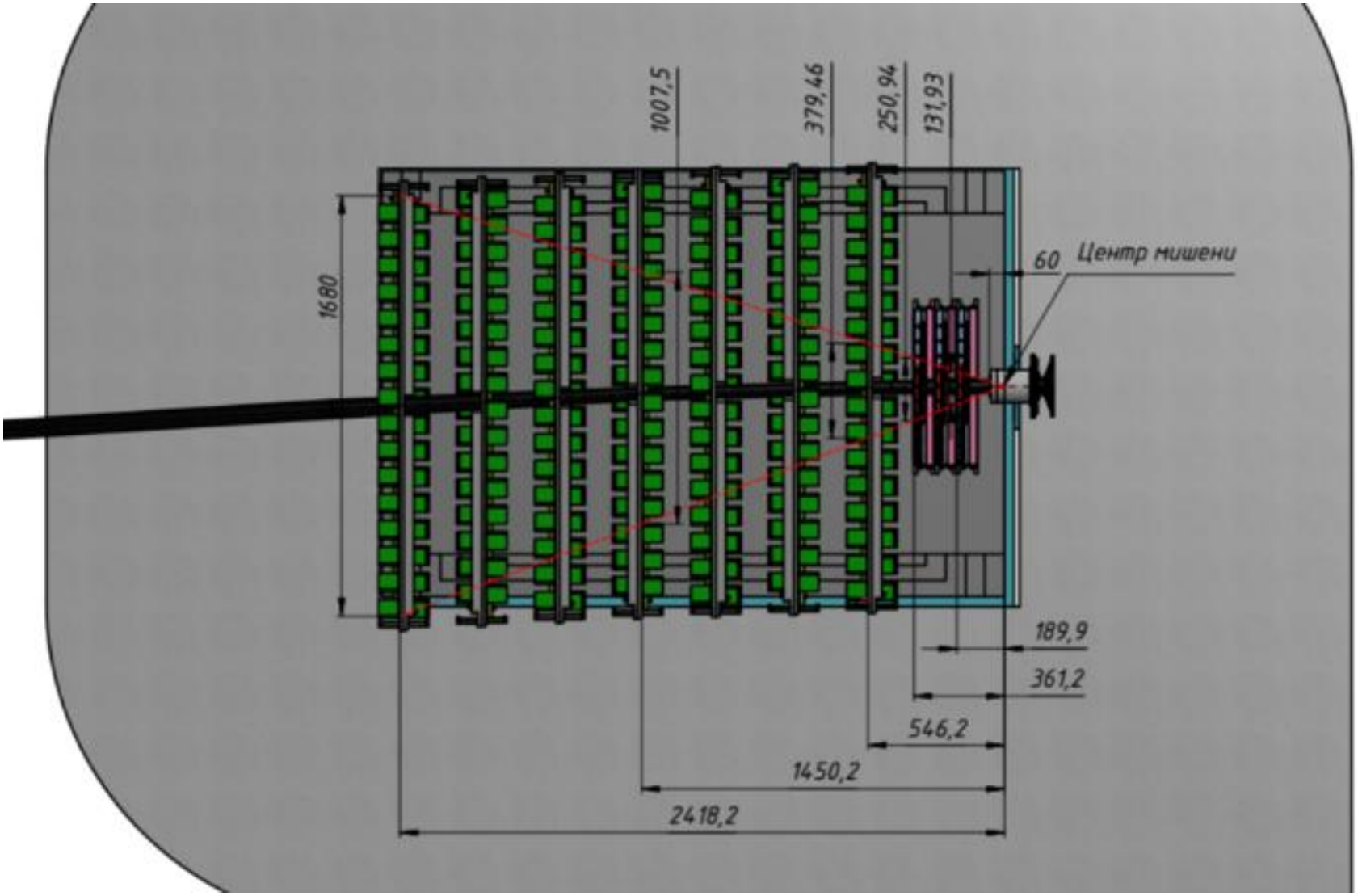


Barrel – trigger detector

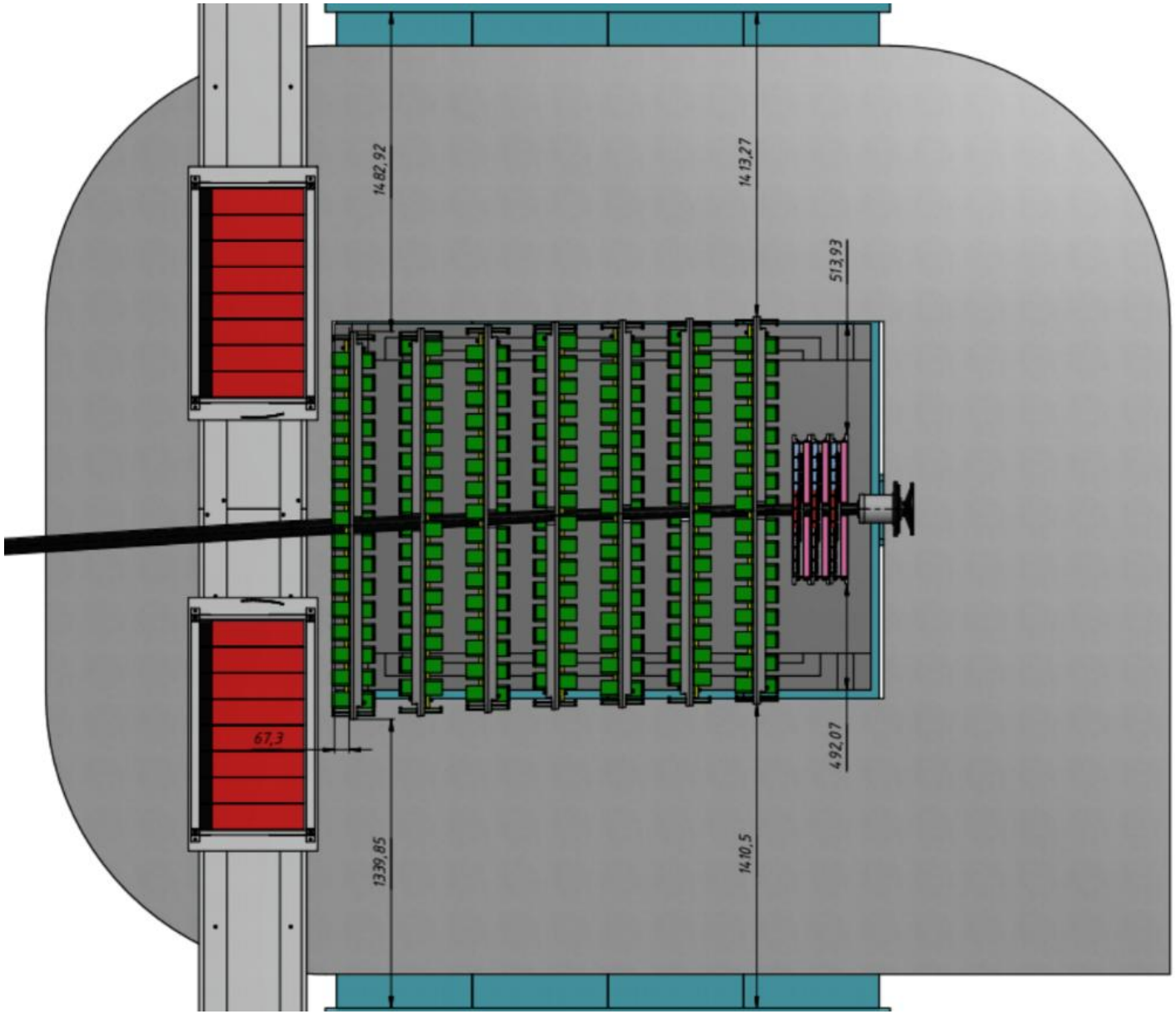




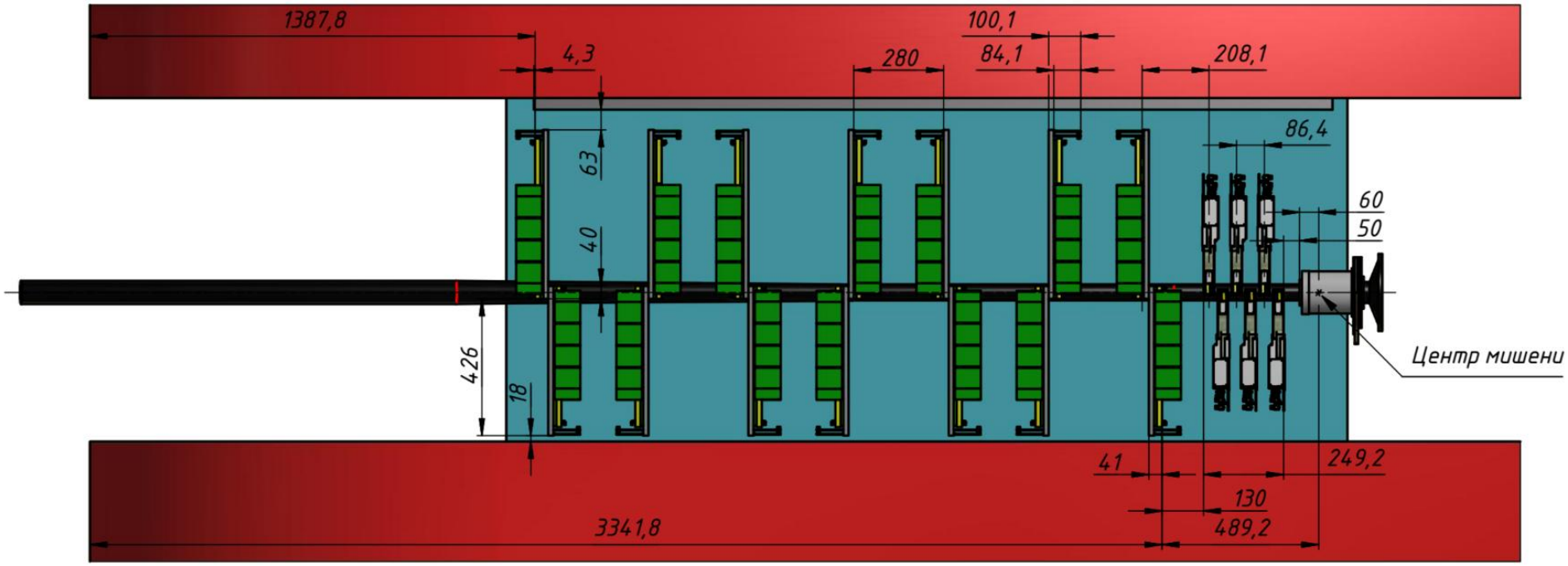
Forward Si+Gem configuration



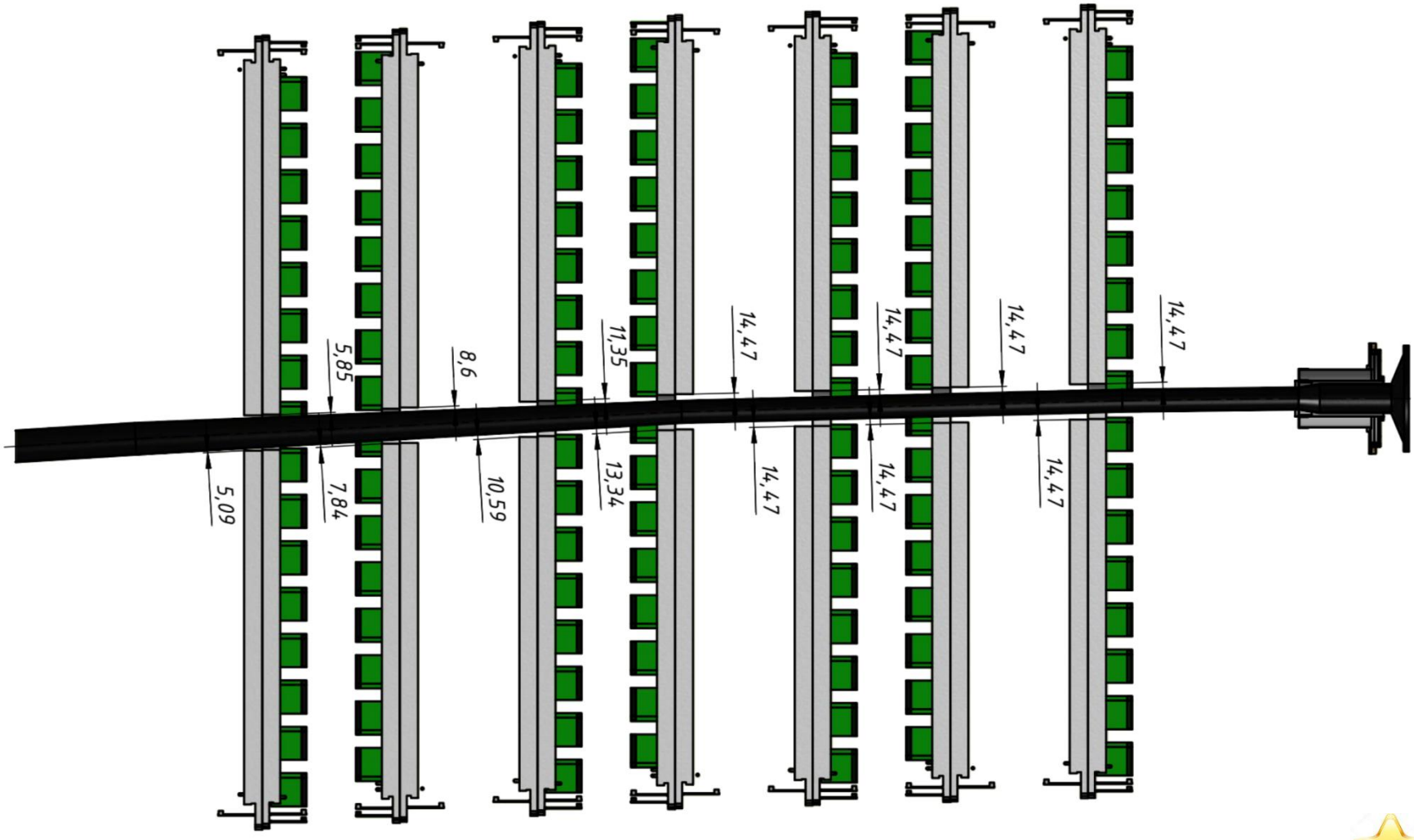
Forward Si+Gem configuration



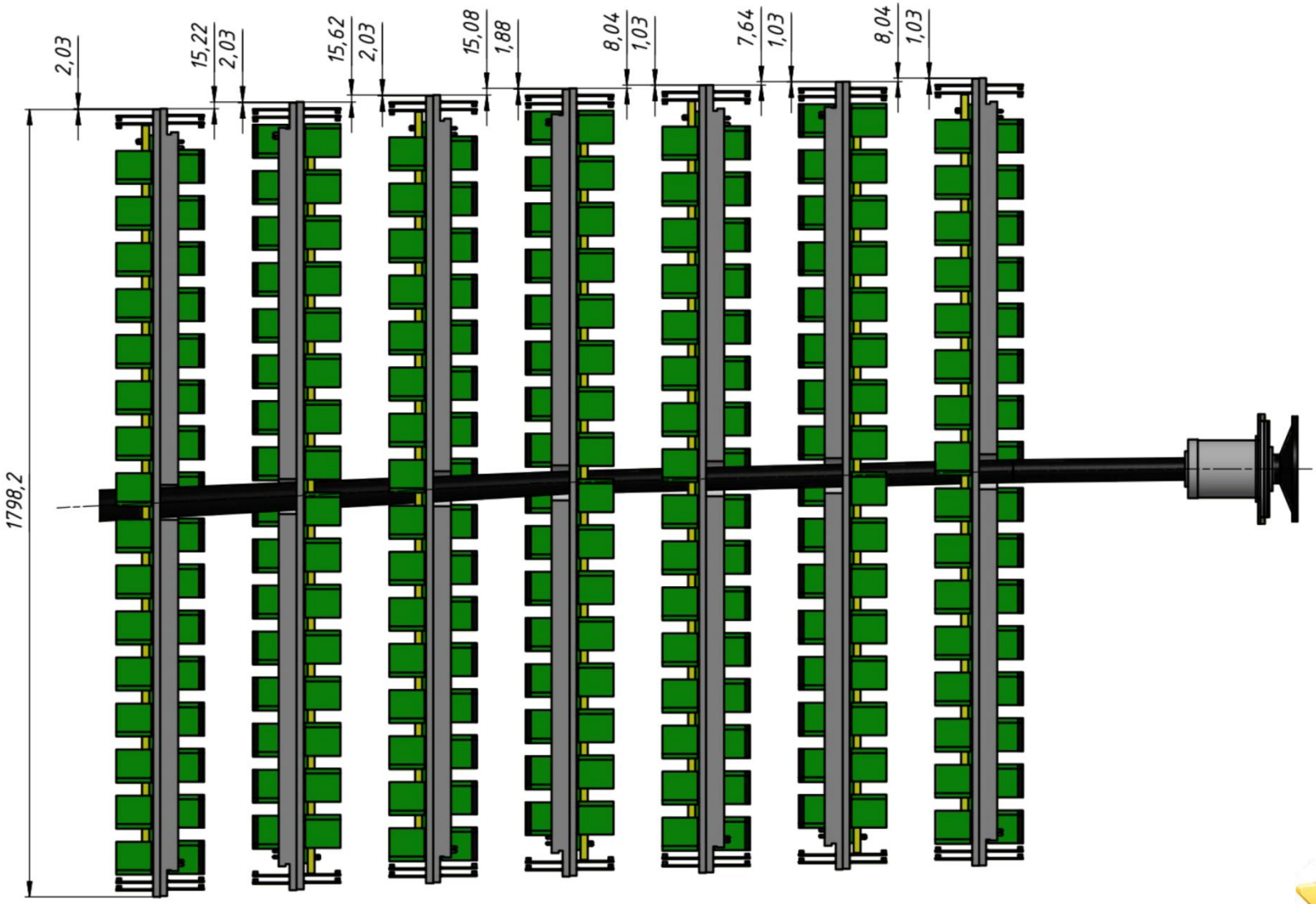
Forward Si+Gem configuration



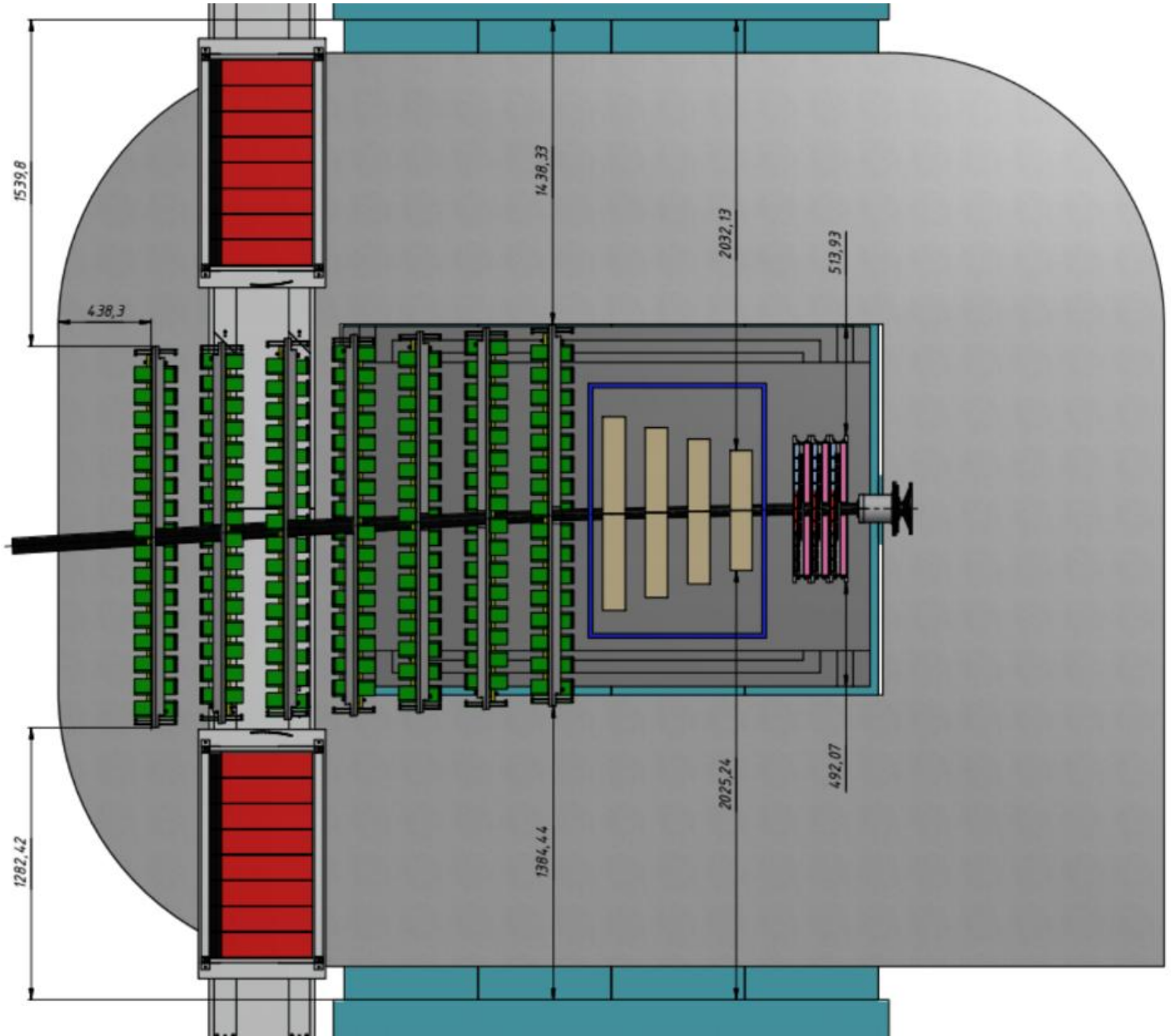
Forward Si+Gem configuration



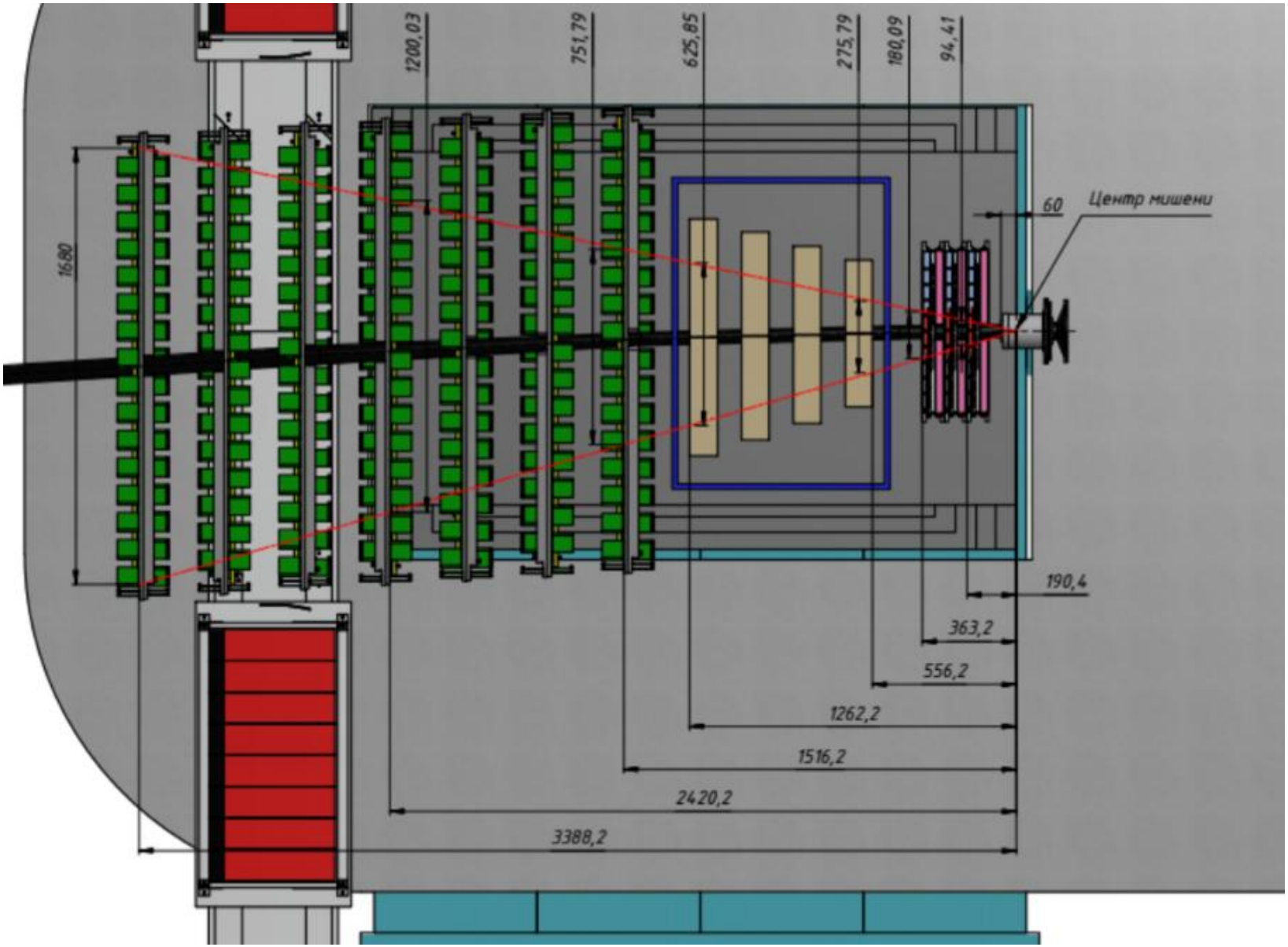
Forward Si+Gem configuration



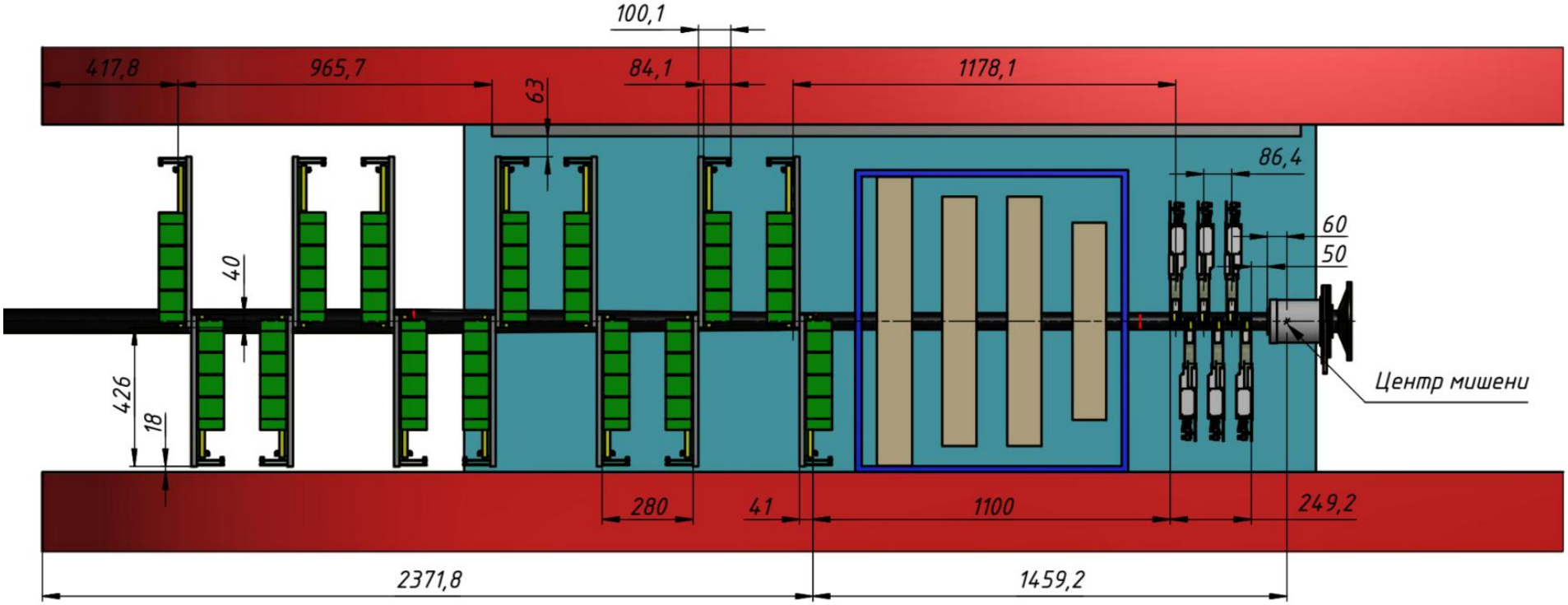
Forward Si+ STS +Gem configuration



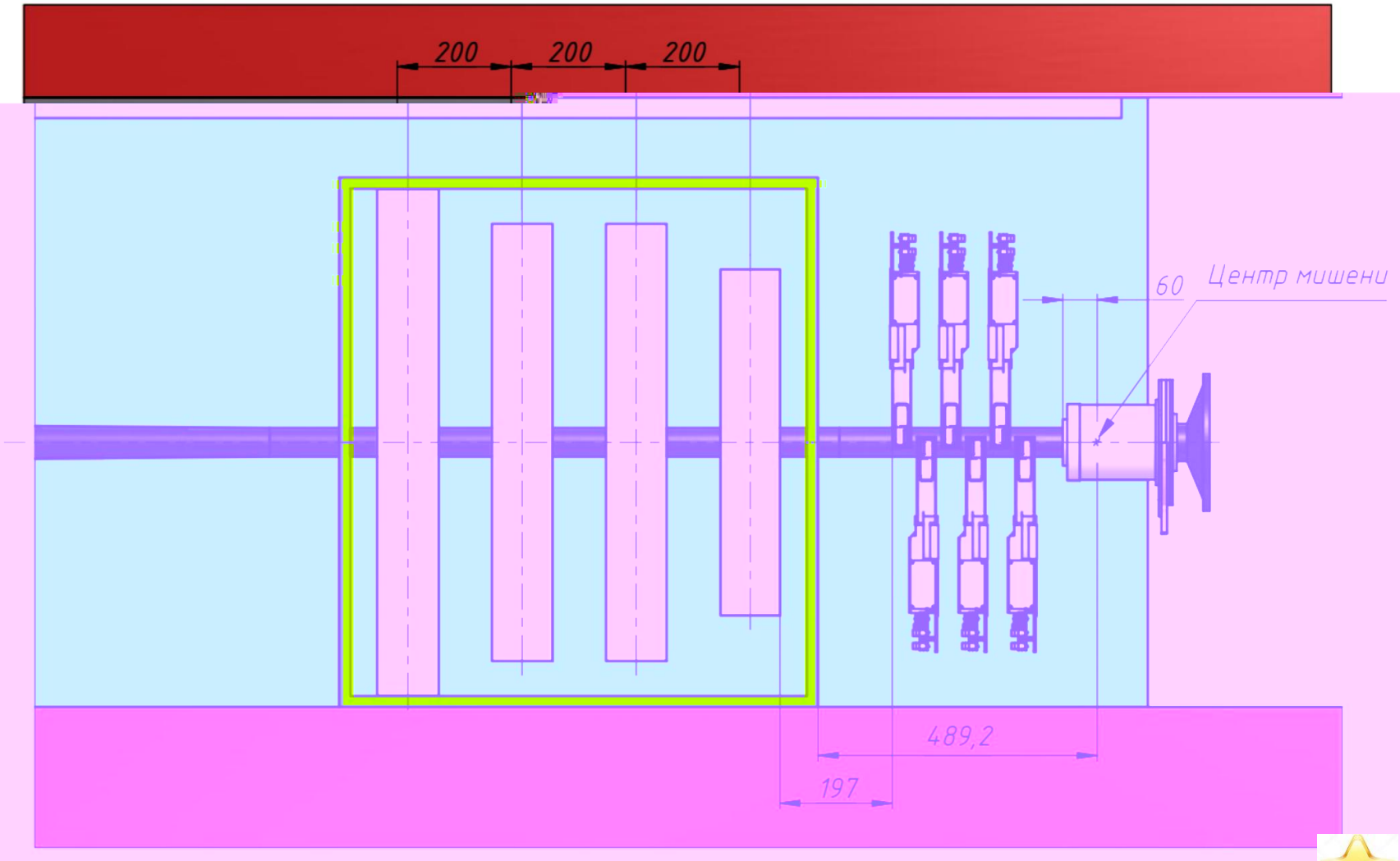
Forward Si+ STS +Gem configuration



Forward Si+ STS +Gem configuration



Forward Si+ STS +Gem configuration



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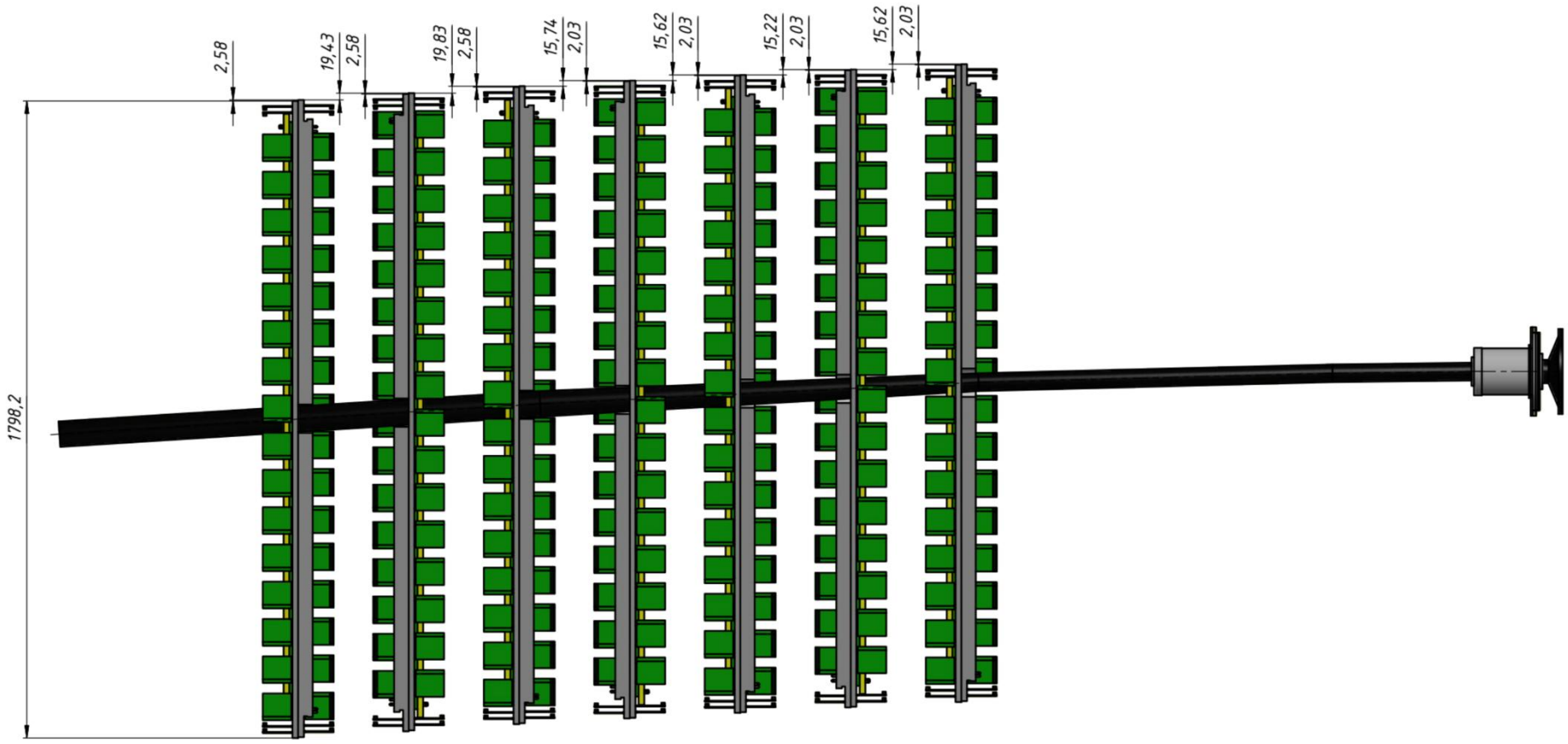
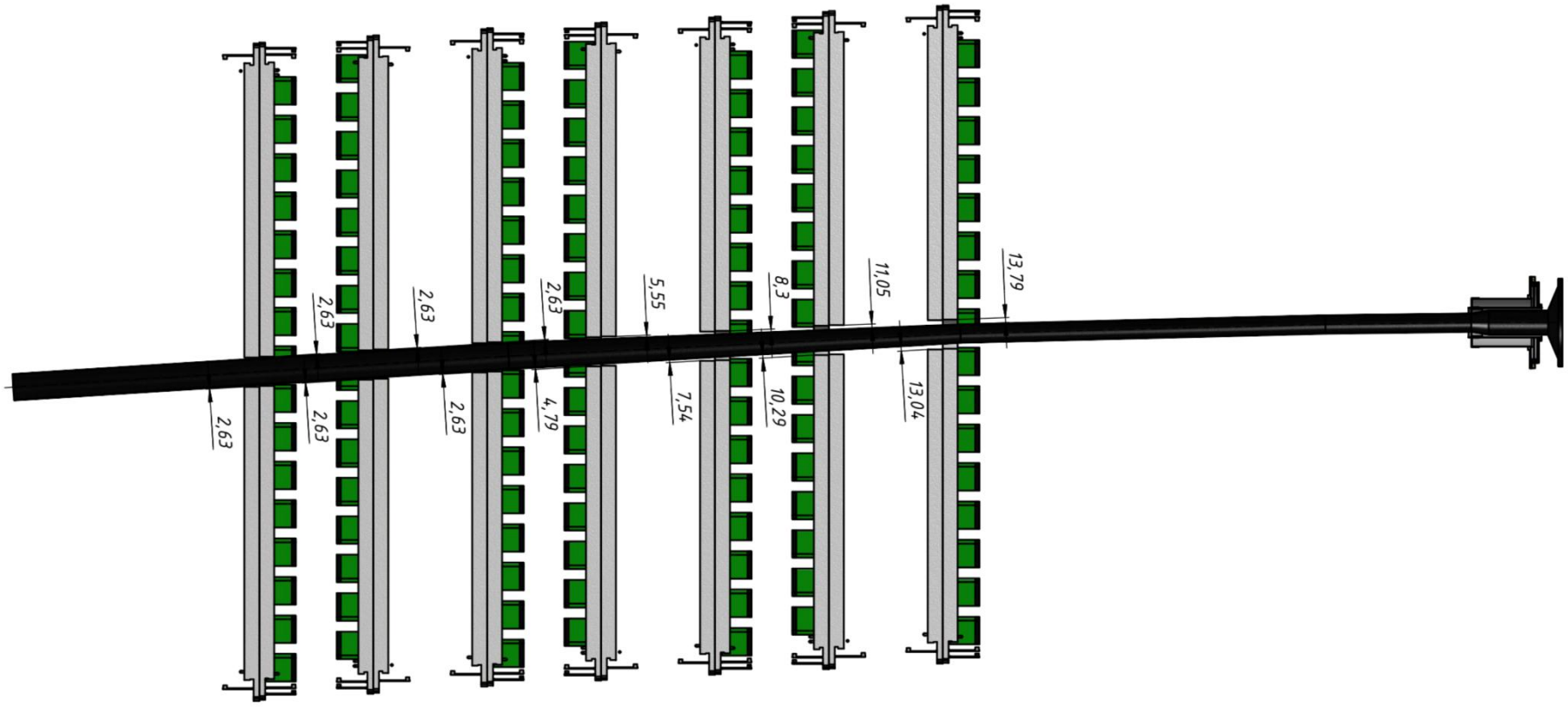
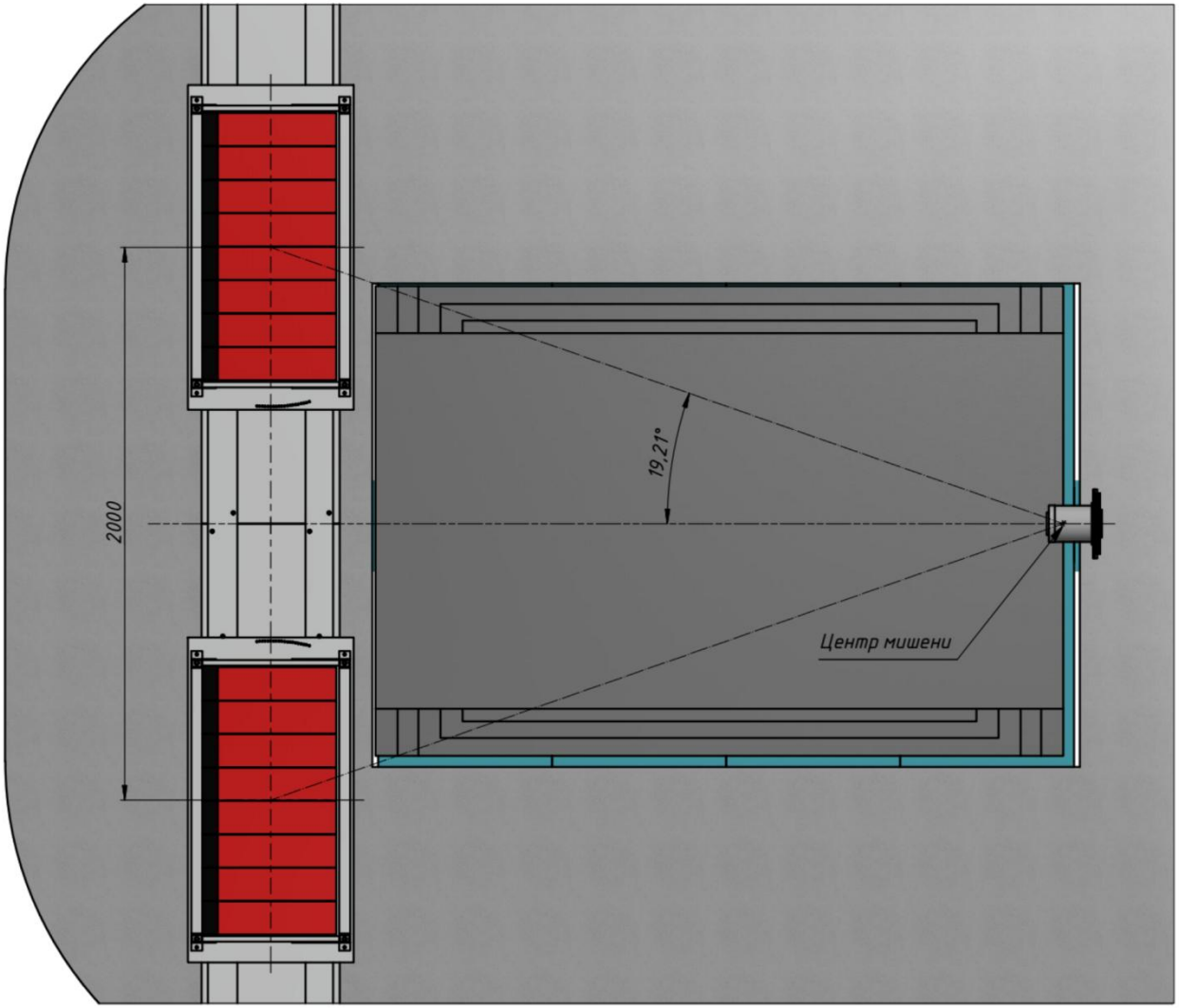


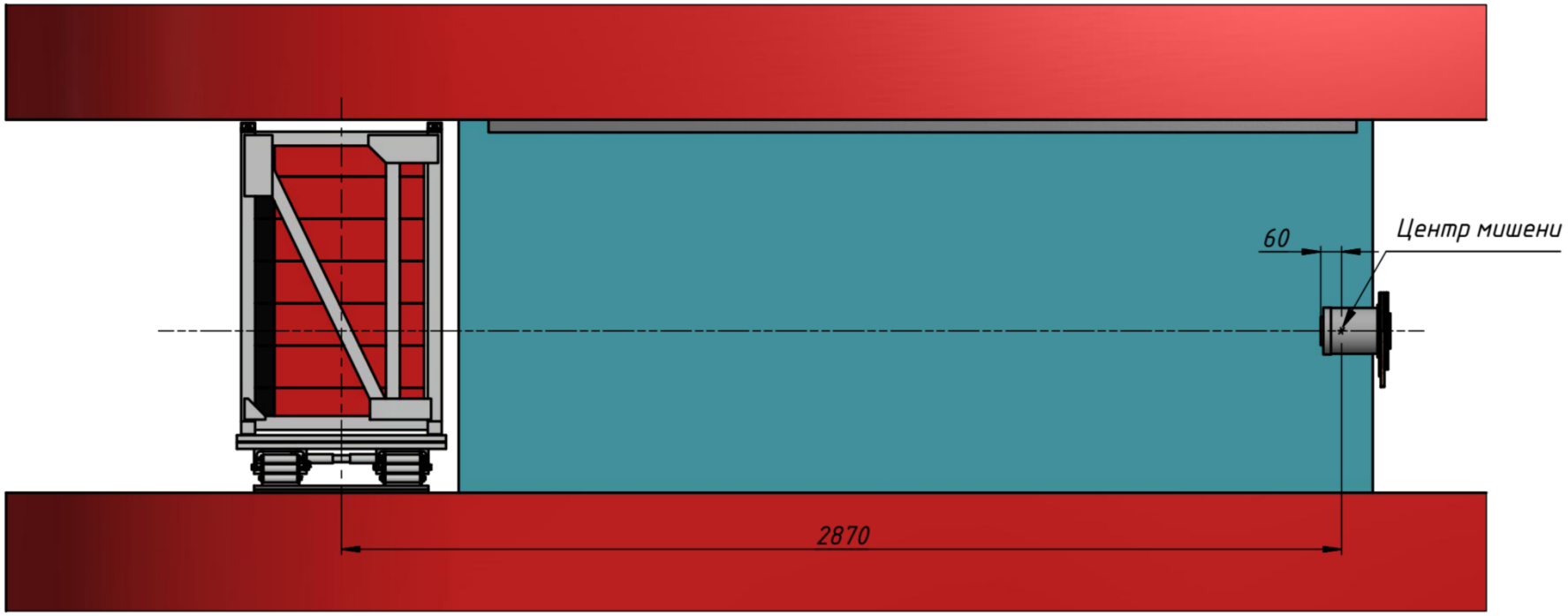
Forward Si+ STS +Gem configuration



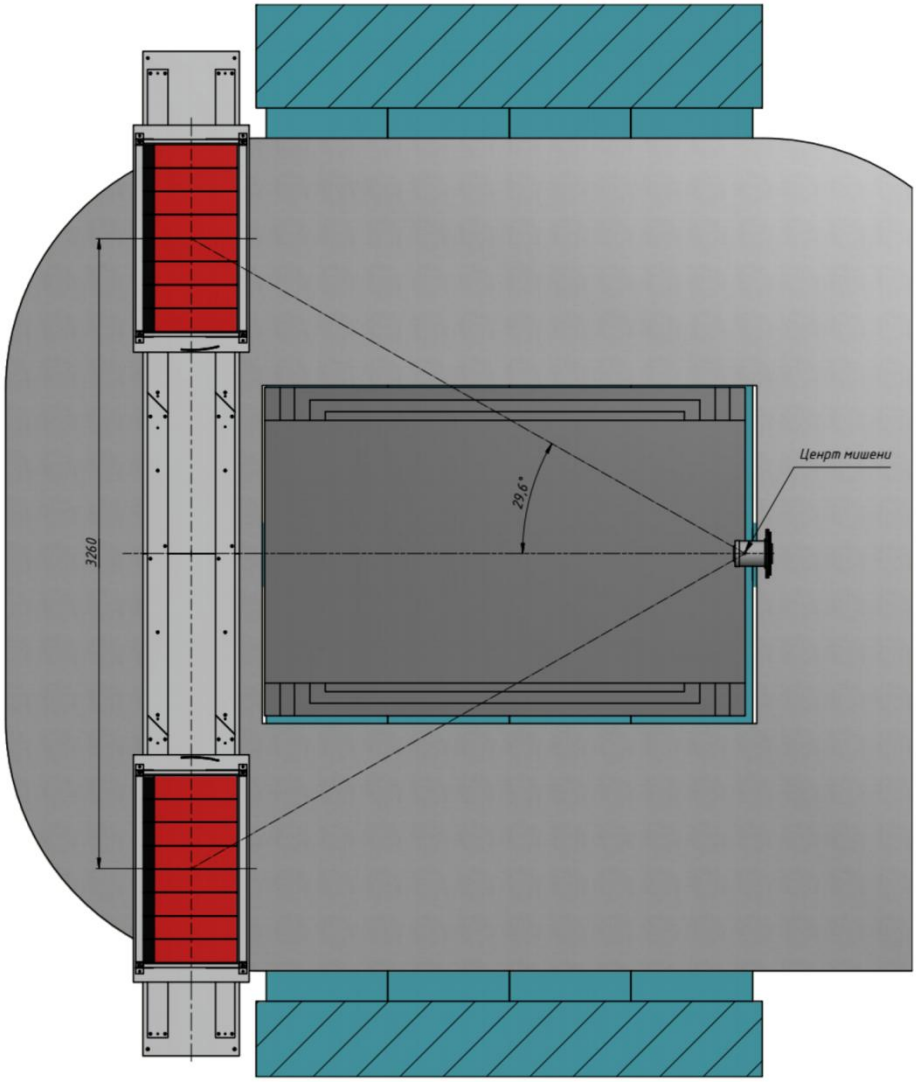
Ecal position



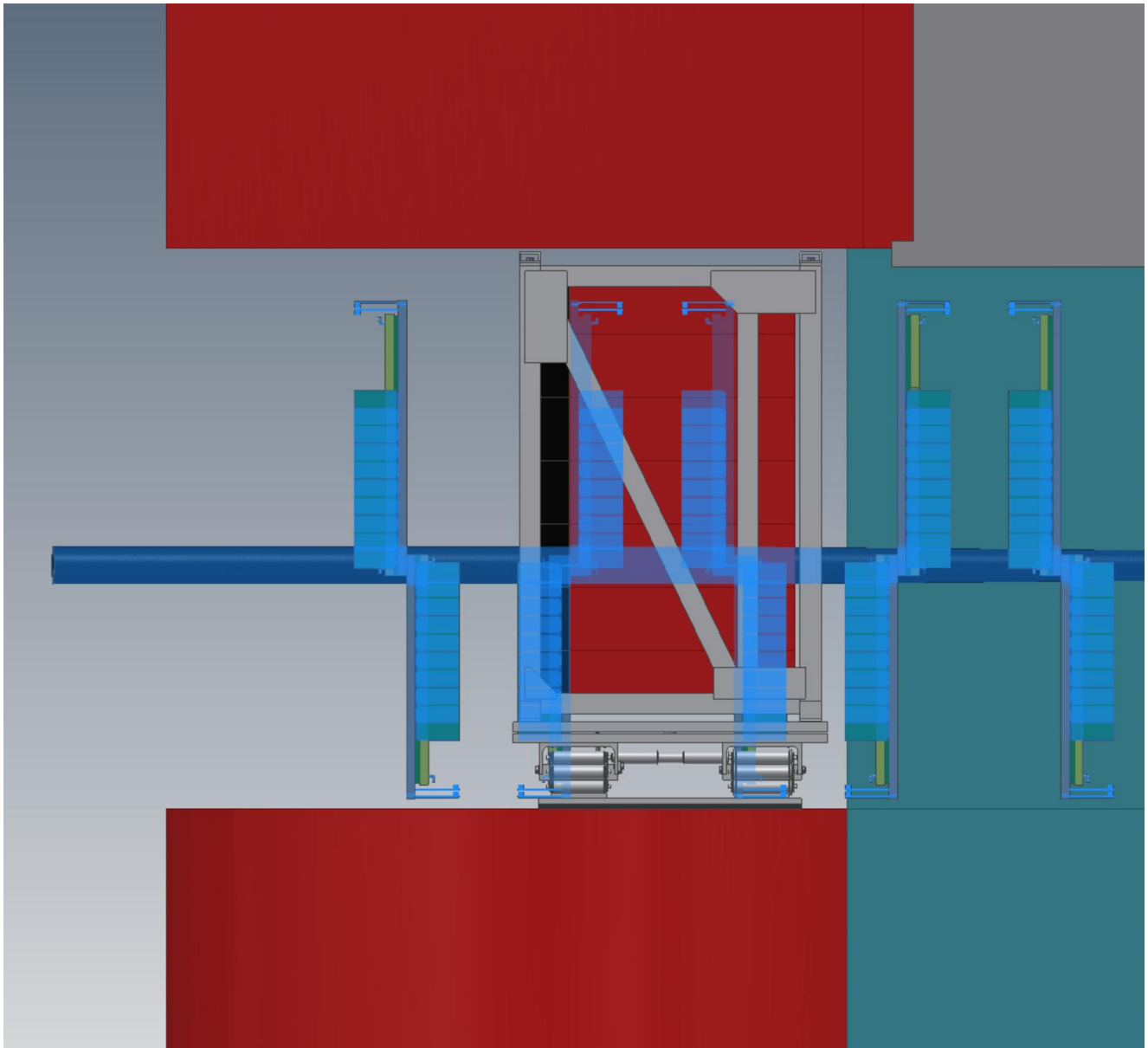
Ecal position



Forward Si+ STS +Gem + ECal configuration



Ecal вместе с конфигурацией Si+STS+Gem



Summary

For design and production of the experimental setup elements, it is necessary to:

1. Approve the target position, and fix the lower pole point as a starting point for positioning of all the detector subsystems.
2. Adopt the location concept of all tracking detectors, taking into account a further STS upgrade plan and all possible changes in the future.
3. Decide on the use of Ecal inside the aperture of the magnet SP-41
4. For further development of the installation of all subsystems, it is necessary, for those who are responsible for tracking detectors, to specify the cables types and quantity as soon as possible (before February 18, 2019).
5. For each subsystem: work out the modules necessary for the operation of their detectors installation in the 19 ’rack (until February 18, 2019).

Plans:

1. Further development of the target station design.
2. Obtain the calculations, approval and production of horizontal reinforced concrete slabs to comply with the safety rules and regulations for sessions with accelerated heavy ions at the BM@N setup.
3. Approval of the configuration and production of the beam pipe inside the SP-41 magnet.
4. Collection of the final power consumption configuration from all subsystems to start the design process of the new power supply system of the BM@N setup.
5. Prepare the place and provide a temporary connection for the MDC(Mobile data center).
6. Development and approval of all units (trigger detectors, profilometers, tracking detectors and beam pipe before the target), production.