

SPD STRUCTURE AND ASSEMBLING



SPD Collaboration

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DUBNA 2019

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EXPERIMENTAL HALL

SPD facilities consist of Production area and Experimental hall.

Total area is more than – 2000m².

Main gate for trucks – 4000mm x 4000mm.

Dismantle part of wall for widest equipment – 8000mm x 8000mm.

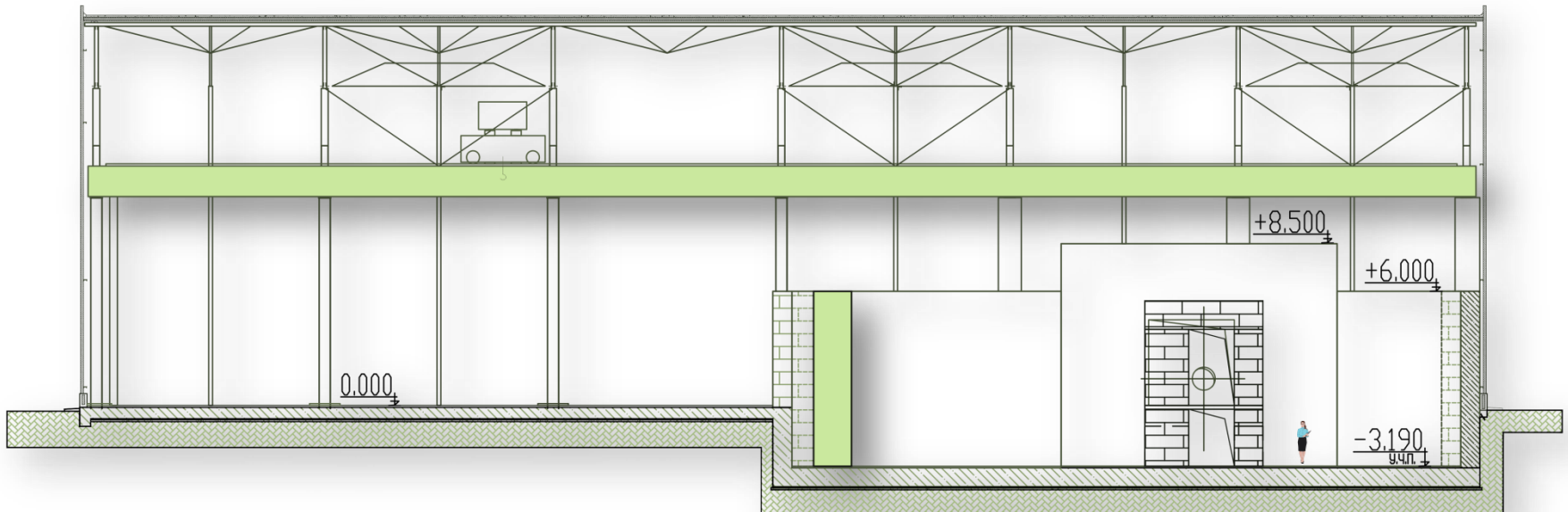
Bridge crane specifications: High range – 12 m;

MAX load main hook – 80 t, auxiliary hook – 20 t.

Longitudinal section

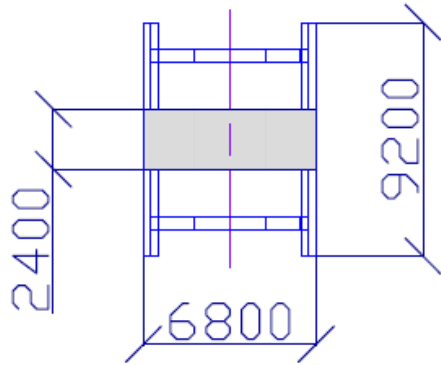
Production area

Experimental hall

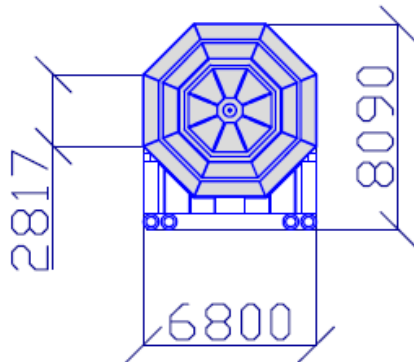


EXPERIMENTAL HALL

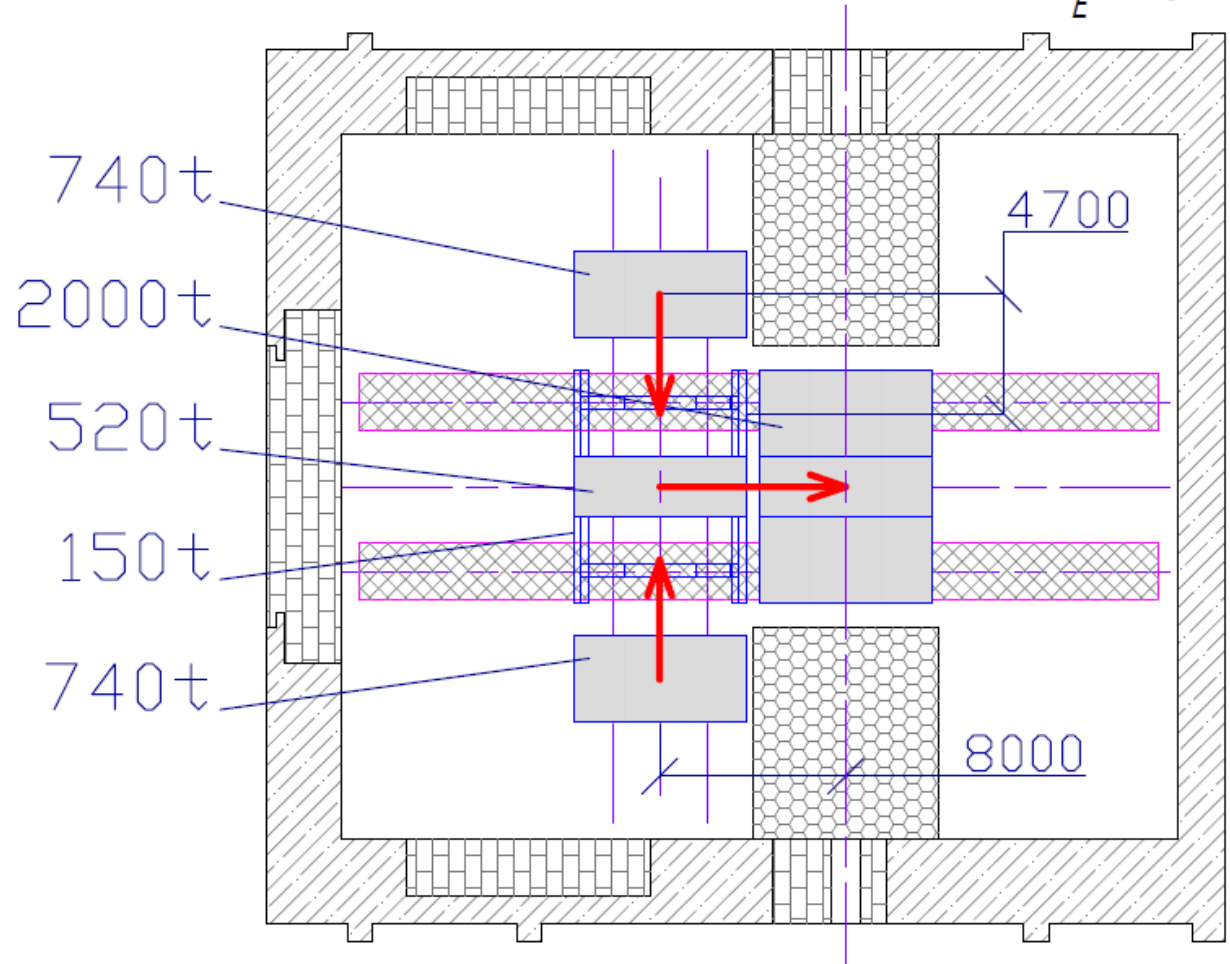
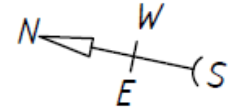
Central part
with frame
550t + 150t



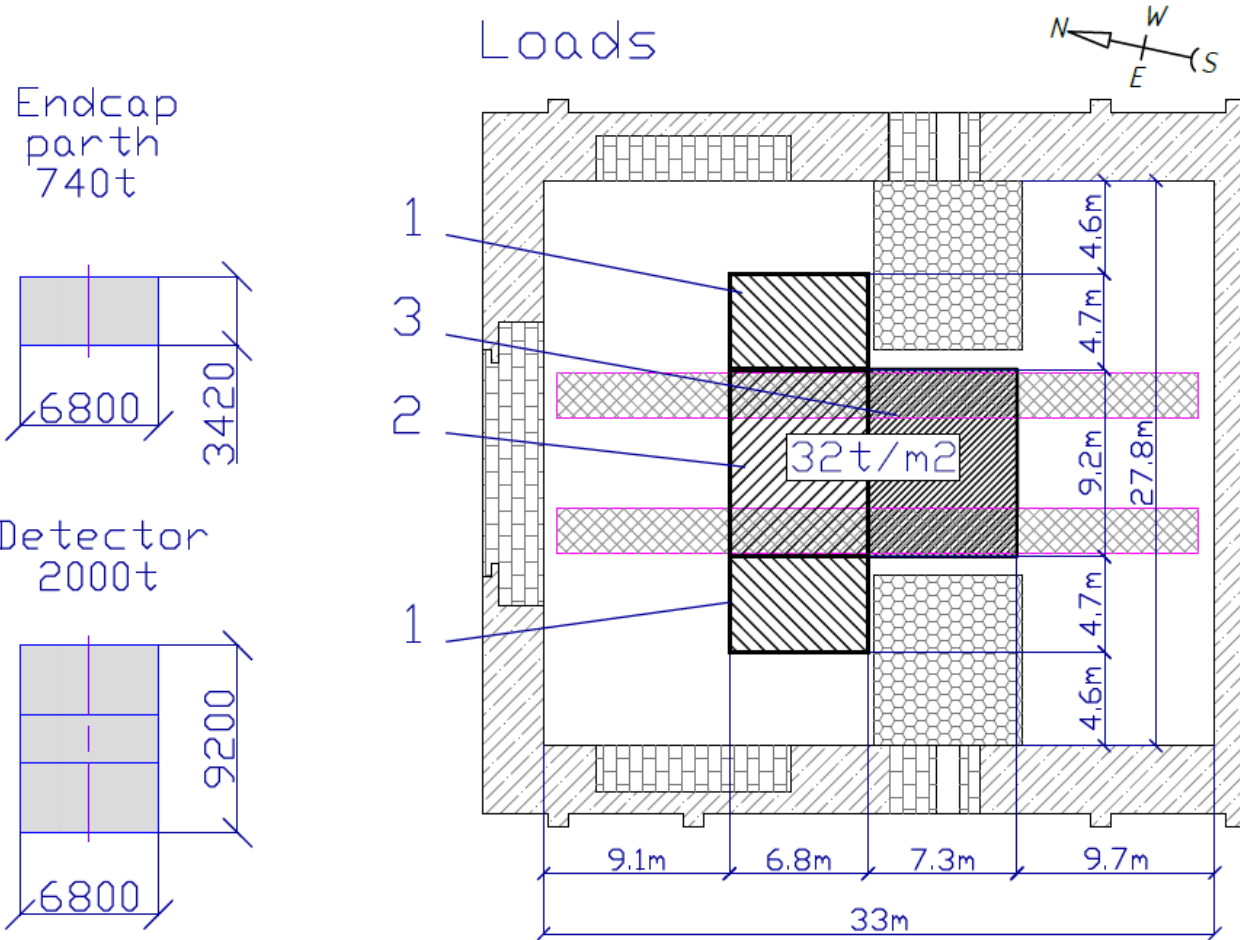
Cross section



Moving



EXPERIMENTAL HALL



EXPERIMENTAL HALL

Moving system variants

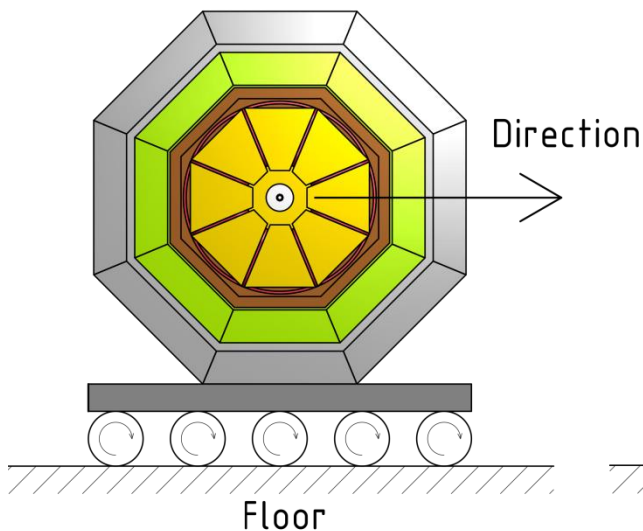
We have specialists with experience with movement systems:

- Rolling friction – NICA MPD experience
- Sliding friction – JINR experience
- Air cushion (air pad) – CERN ATLAS experience

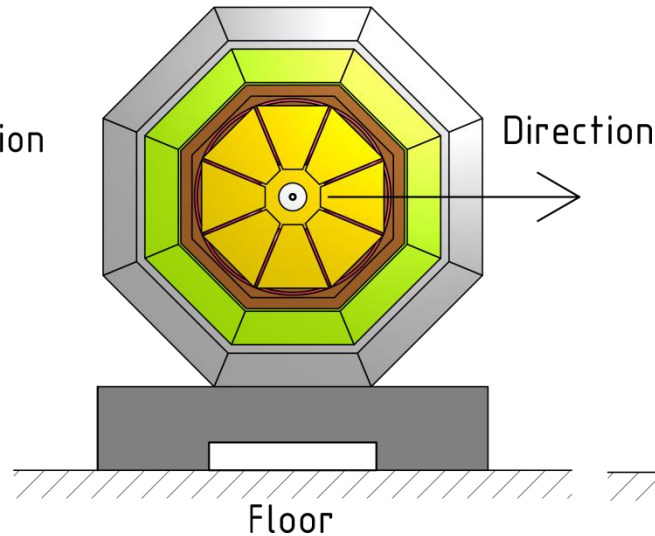
Preliminary concept of the movement system – August-September 2019.

| Approximate parameters | |
|------------------------|--------------------|
| SPD exp. Hall | |
| Length | 33 m |
| Width | 27,8 m |
| Height | 11,5 m |
| Area | 900 m ² |
| SPD | |
| Length | 9,2 m |
| Width | 6,8 m |
| Height | 8,1 m |
| Weight | 2000 t |
| Move distance | 8 m |

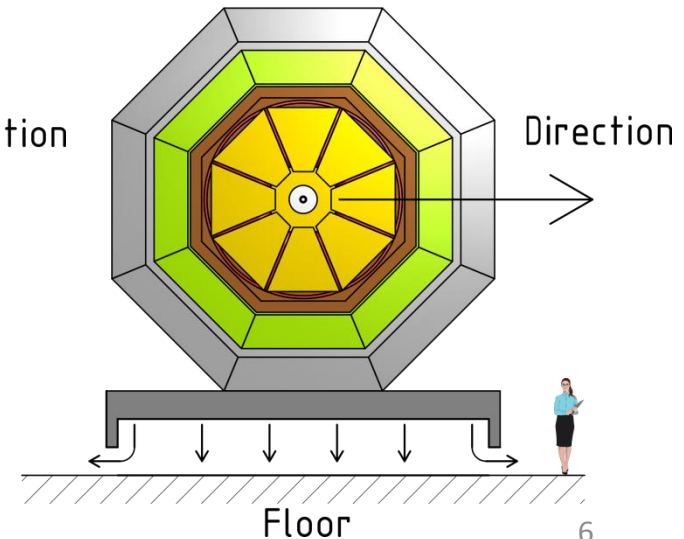
Rolling friction



Sliding friction



Air cushion



EXPERIMENTAL HALL

The request letter has been sent (signed by LHEP Director) in November 2018.

Examination of Hall foundation is in progress.

The conclusion is expected after April 10.

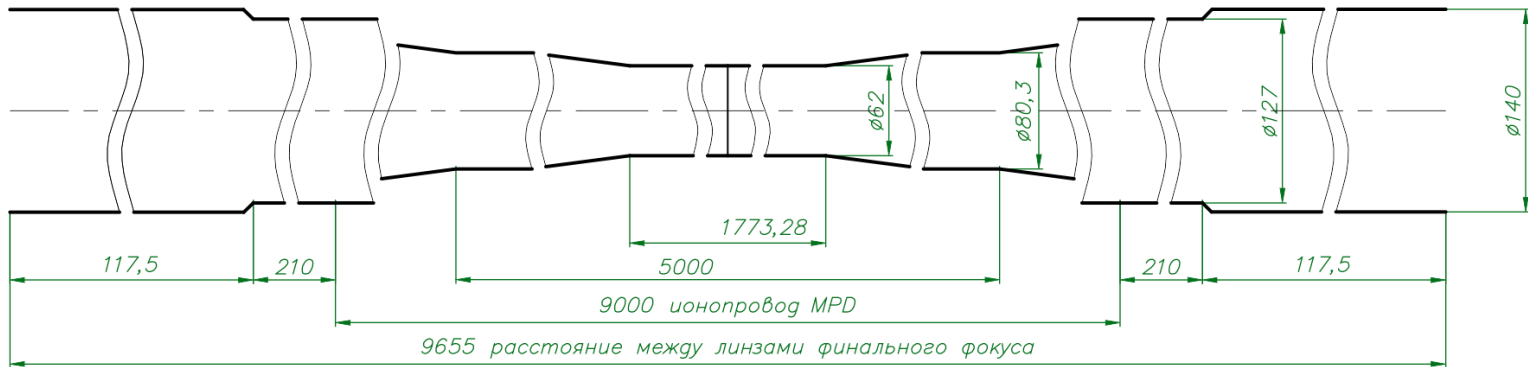
The work with the floor SPD Hall were stopped in November 2018.

Currently SPD Hall is considered as last point to be build for NICA collider.

COLLIDER DESIGN FOR SPD

Theoretical drawing - Acceptance example

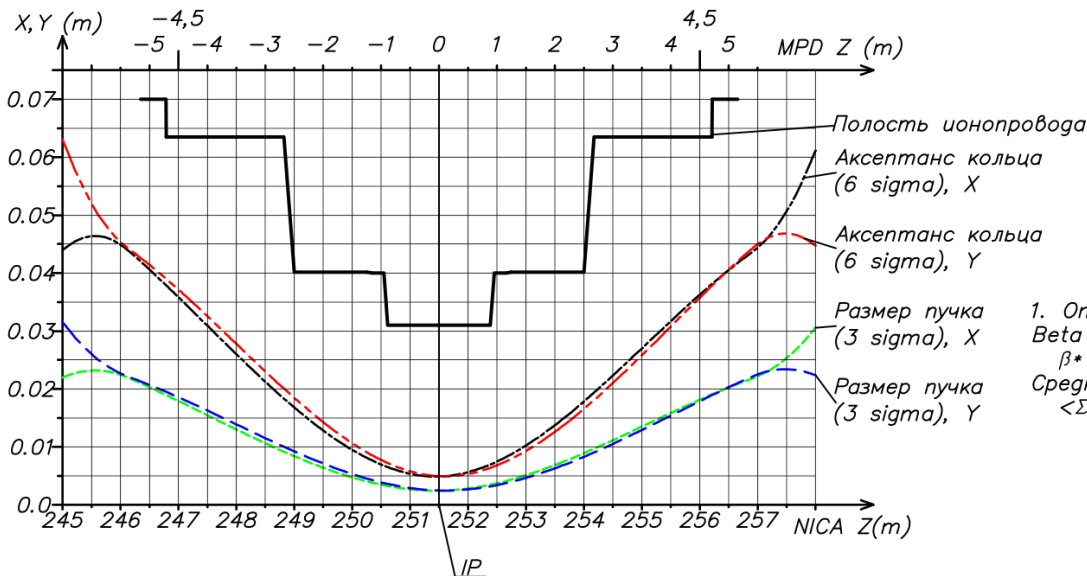
Теоретические размеры внутренней полости Ионоровода MPD (1:2)



Совмещение теоретического профиля ионоровад MPD и огибающих линий пучка

М 1:50 по горизонтали

М 2:1 по вертикали



Утверждаю:

_____ И.Н. Мешков

Согласовано:

_____ В.М. Головатюк

_____ О.С. Козлов

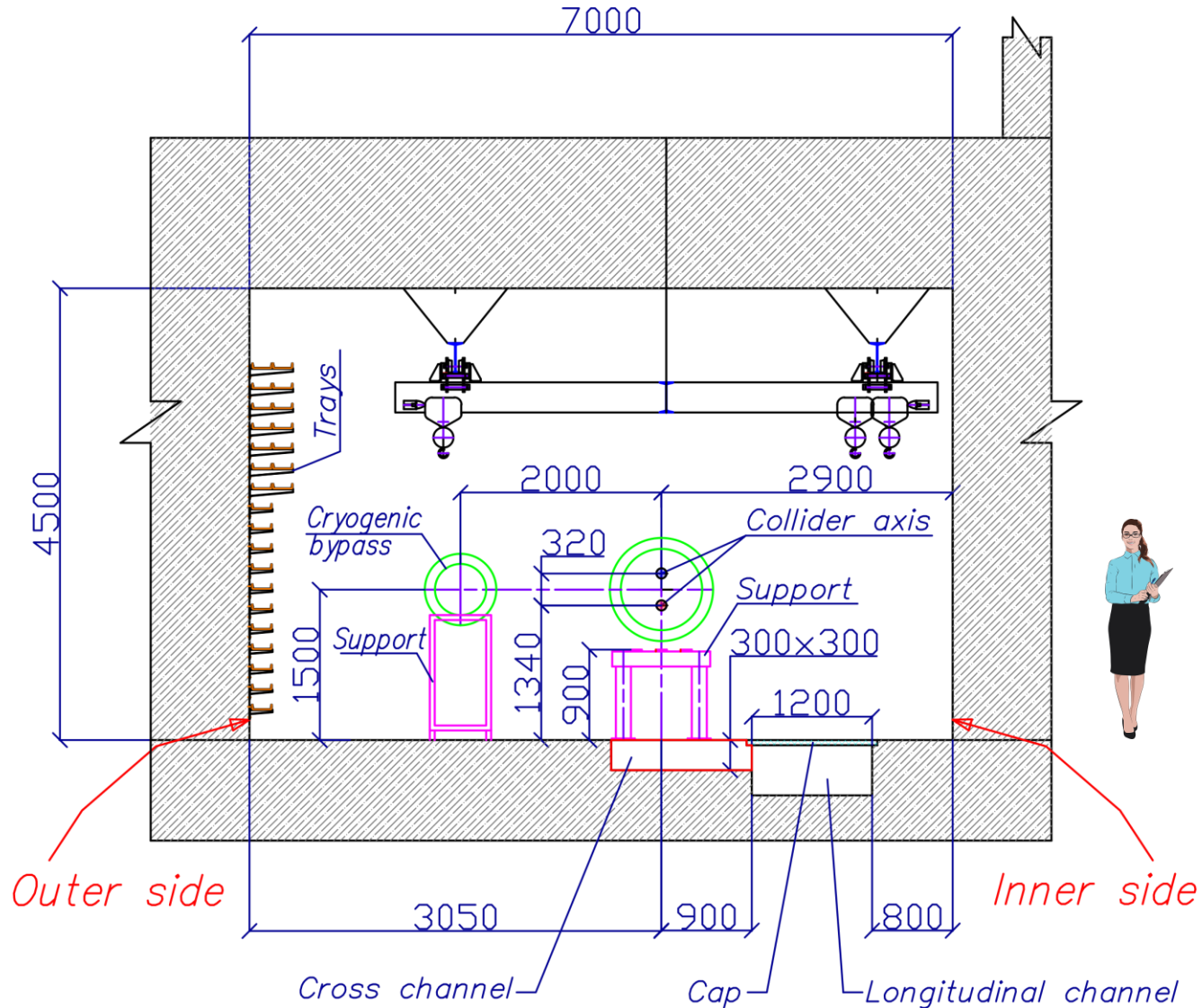
_____ А.В. Смирнов

_____ Е.М. Сыресин

1. Оптика соответствует:
Beta star
 $\beta^* = 0,6\text{ м}$
Среднеквадратичный эмиттанс
 $\langle \Sigma \rangle = 1,1\pi \text{ мм-м рад.}$

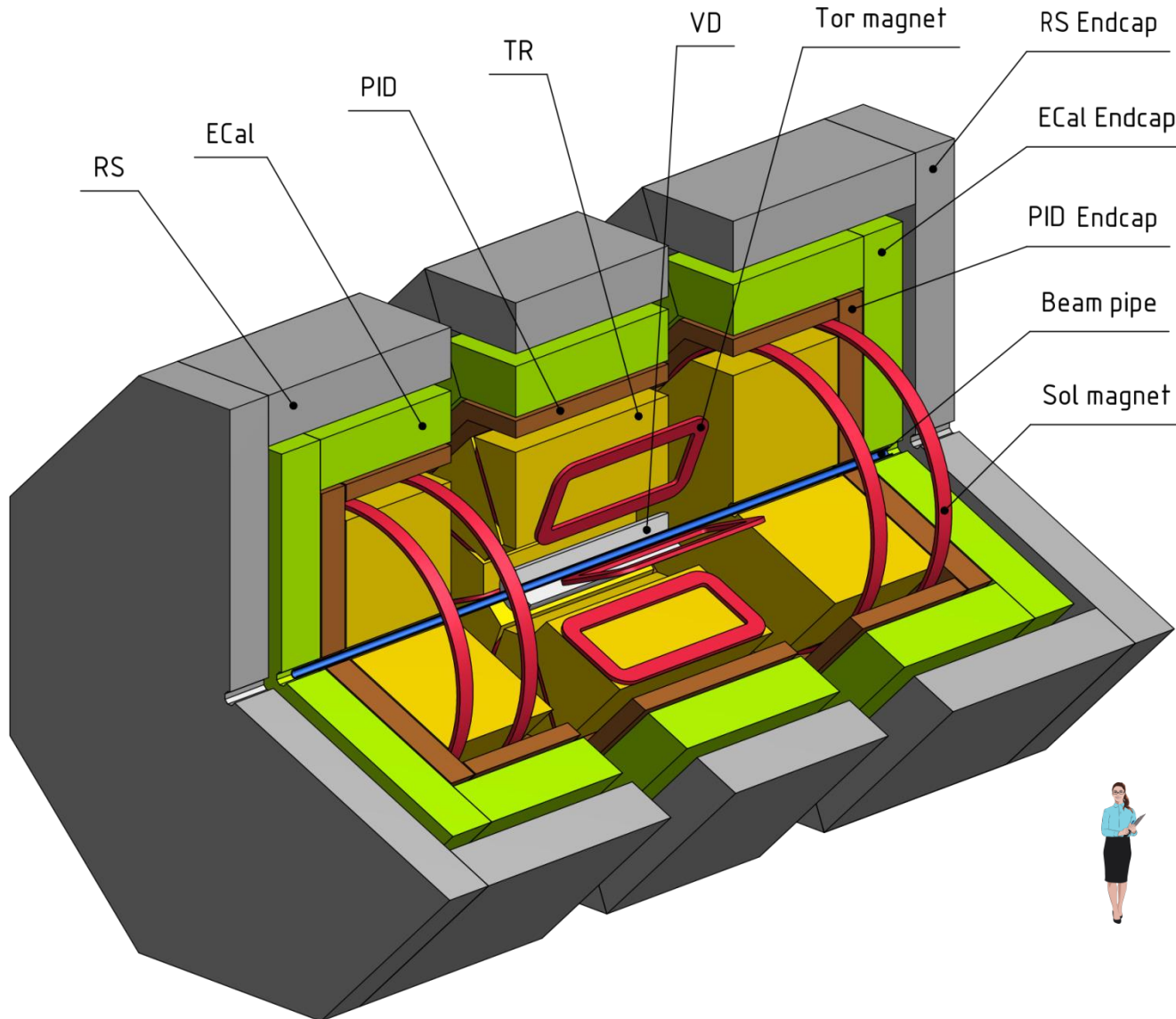
COLLIDER DESIGN FOR SPD

Collider tunnel cross section scheme



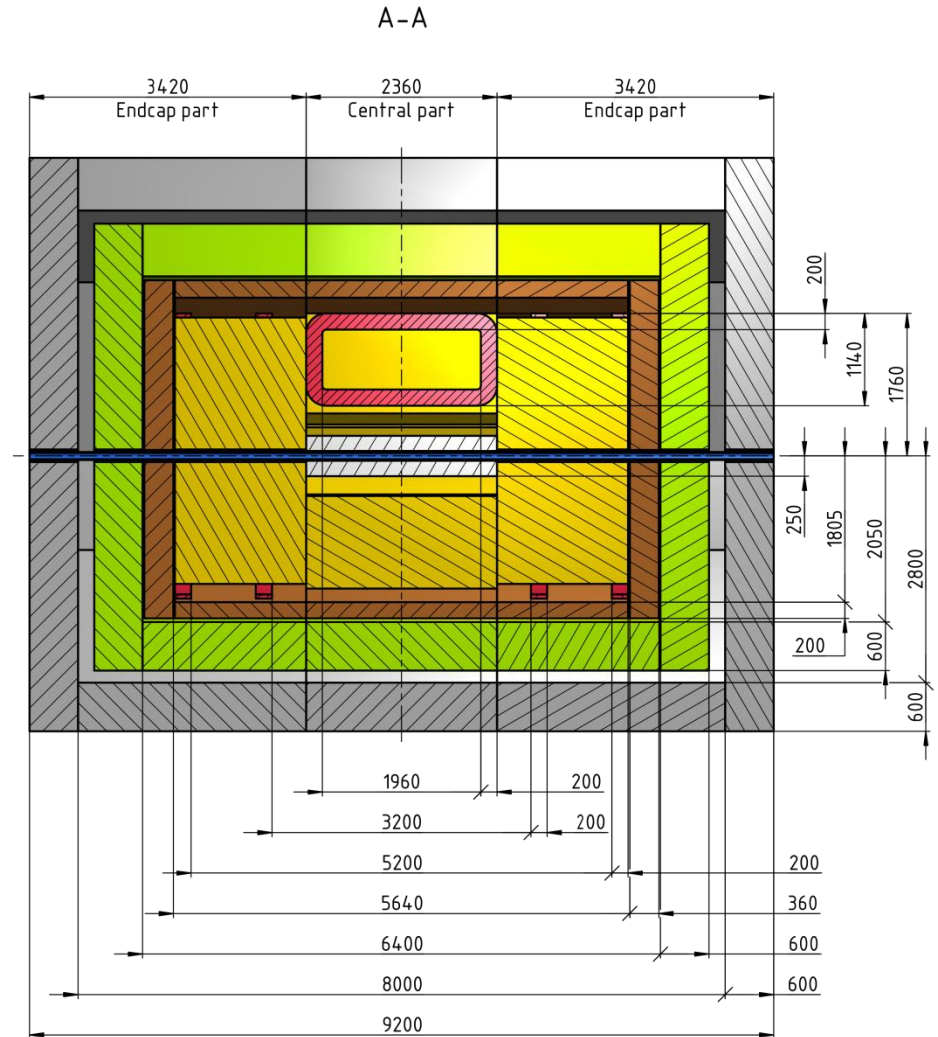
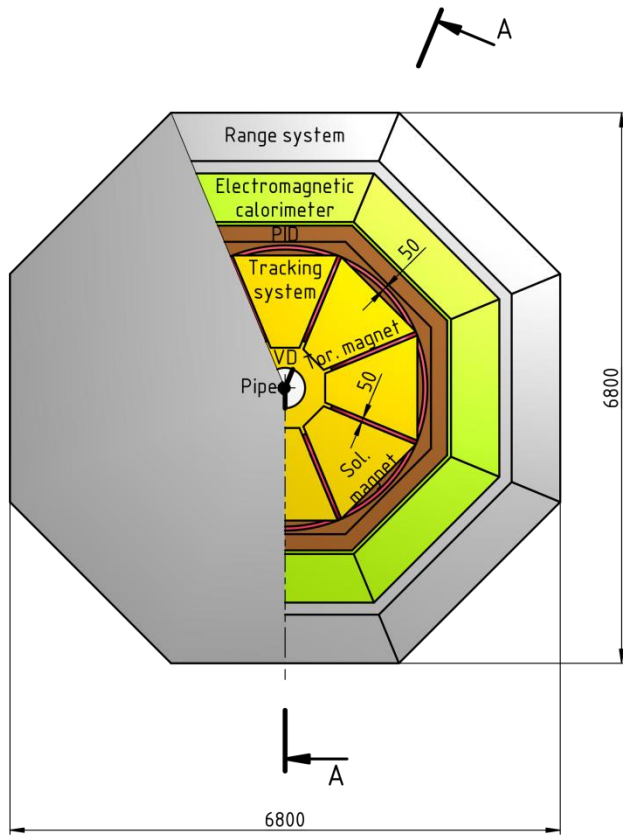
EXPERIMENTAL SET-UP

Scheme of SPD



EXPERIMENTAL SET-UP

General drawing of SPD



PRELIMINARY PLAN

Data from detector experts are needed to do new design of SPD.

Detailed data on requirements for collider design near SPD are necessary.

Design IP pipe has to be done with vertex experts.

New SPD design (according results of basic examinations).

PRELIMINARY PLAN

| | 2019 | | | | | | |
|-----------------------------------------------|-------|-------|-----|------|------|--------|-----------|
| | March | April | May | June | July | August | September |
| Examination of hall foundation. Valuation. | | | | | | | |
| Beam pipe for IT. Concept design. | | | | | | | |
| Movement system. Concept design. | | | | | | | |
| Redesign of set-up. Concept design. | | | | | | | |
| Assembling. Concept design. | | | | | | | |



THANK YOU!

CONTENTS

Vica - Virtual collider assistant

Skills:

Visual determination of dimensions
by comparing an object with a human one.

Goal:

Helps NICA.

Strengths:

Works hard.

