SPIN PHYSICS DETECTOR – SPD Preliminary SPD design



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INTRODUCTION

SPD will be a part of the NICA Complex, located in Laboratory for High Energy Physics (LHEP), Joint Institute for Nuclear Research (JINR), Dubna, Russian Federation. The facility is expected to finish its construction phase in 2020.



CONFIGURATION

Our first steps.



Beam pipe

CONFIGURATION 1

Consists of: RS, Ecal, End TOF, End TS, Ring magnets, IT.

Overall size: L9200mm x W6800mm x H6800mm.



9200

600

CONFIGURATION 2

Consists of: RS, Ecal, End TOF, End TS, Ring magnets, IT, + Central TOF, Central TS, Toroid magnets. A-A



FACILITIES

SPD facilities consist of Production area and Experimental hall.

Total area is more than $-2000m^2$.

Main gate for trucks - 4000mm x 4000mm.

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

Longitudinal section scheme

Production area

Experimental hall



FACILITIES

The floor area has local and overall load limits, it's drawn on the facilities plan. Bridge crane specifications: High range – 12 m; MAX load main hook – 80 t, auxiliary hook – 20 t; MAX moving speed along – 30 m/min, across – 15 m/min.



EXPERIMENTAL HALL

Rails for joining central part with end parts, for moving complete SPD to work position. The rails must be reinforced to distribute the weight on the floor.

We will use concrete blocks for temporary protection from radiation.

TUNNEL OF THE COLLIDER

INSTALATION

Installation positions

- A. Assembly
- B. Joint
- C. Work

Explication of the experimental hall

- 1. End cap SPD
- 2. Full SPD
- 3. Central part SPD

INSTALATION

Cross section SPD on work position

CONCLUSION

The hall was designed for a total load of 1,200 tons. The estimated weight of SPD is 1800 tons.

We have 1410 millimeters to accommodate the SPD support, the movement mechanism and the floor reinforcement.

The configuration of SPD differs from MPD configuration in weight, in size, in structure.

MPD rail tracks are not suitable for SPD.

THANK YOU FOR YOUR ATTENTION!