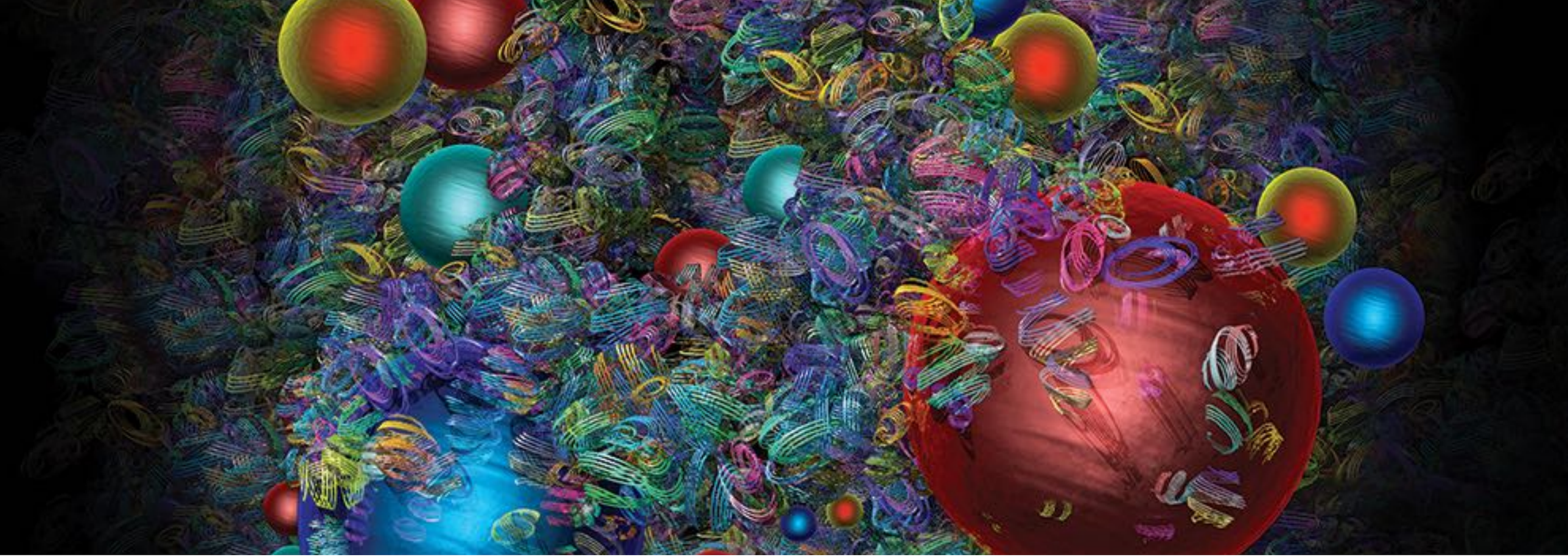


REPORT OF THE SPD PROJECT LEADER AT JINR

Alexey Guskov, JINR

Alexey.Guskov@cern.ch

13.12.2021

TASKS FOR 2021

- Interaction with SPD DAC
- TDR preparation
- Collaboration building

SPD DETECTOR ADVISORY COMMITTEE

Andrea Bressan, INFN/ University of Trieste
chair

Peter Hristov, CERN

Pasquale di Nezza, INFN, Frascatti

- *Formed by the end of April*
- *1st meeting: 26.5.21*
- *Questions & answers*
- *2nd meeting 1.10.21*

MAIN CHANGES IN THE SPD SETUP CONCEPT

- Magnetic system outside ECAL
- No DSSD+MAPS combination for the vertex detector (rejected by DAC)
- No aerogel detector in barrel
- New DAQ concept
- …

FIRST PHASE OF THE SPD OPERATION

It seems, we will not have money for the whole detector at once. So, we should think about the minimal configuration of the SPD setup to start.

Absolutely needed: Range system, magnet and tracker.

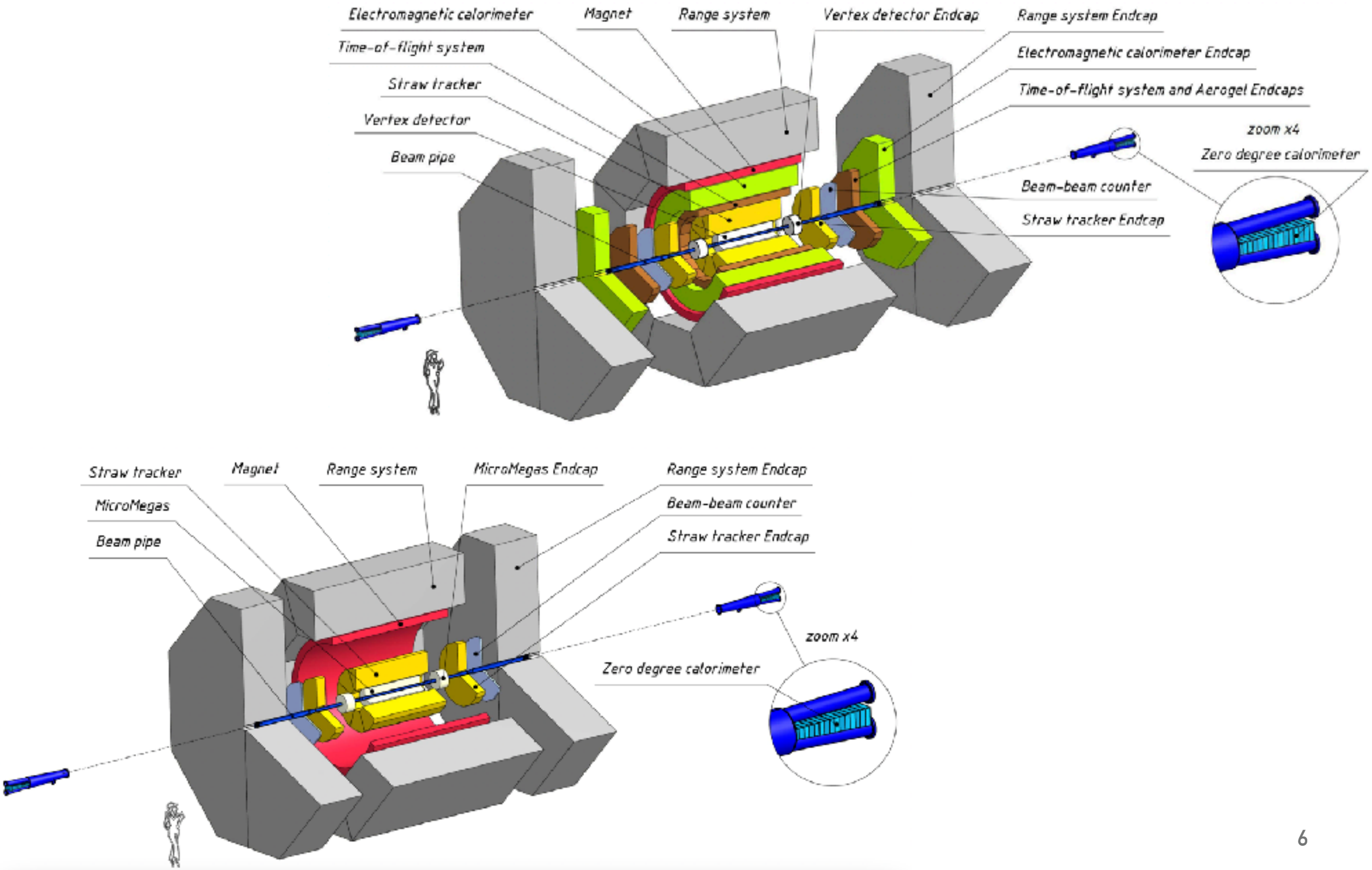
It would be nice to have: BBC, ZDC, ECAL at least in one end-cap.

We need to put something to the central part instead of the silicon vertex detector to improve momentum reconstruction. Now we discuss 2 or 3 layers of Micromegas detector.

We need to compensate the absence of the ECAL for muon filtering.

During the first phase other groups continue R&D and construction work on their detectors.

SPD TECHNICAL BOARD 2.12.21



EXPECTATIONS FROM POLARIZED INFRASTRUCTURE AT NICA

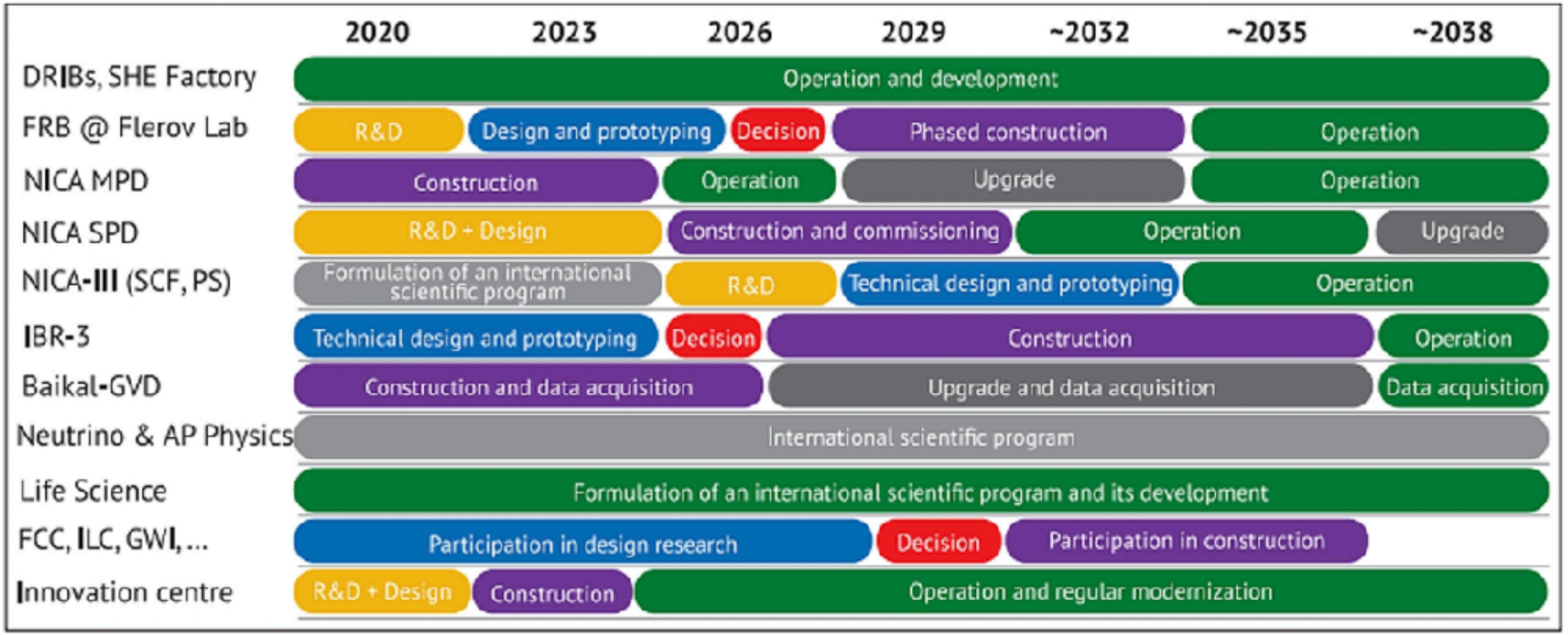
Till 2028 NICA will have the following modes:

1) A-A
2) polarized p-p (spin transparency mode) with beam kinetic energy up to 3.75 GeV
3) polarized d-d (spin transparency mode) with beam kinetic energy up to 1.3 GeV

When 2 Sibirian snakes will be installed in each ring (8-10 M$) and electron cooling in booster, the following modes will be available:

1) Transversely polarized p-p with any beam kinetic energy up to 12.6 GeV
2) Longitudinally polarized p-p with beam kinetic energy up to 12.6 GeV with a step 0.5 GeV
3) Transversely polarized d-d at any energy till 6.3 GeV/u
4) Longitudinally polarized d-d at any energy till 4.2 GeV/u

WHEN?


2020
2023
2026
2029
~2032
~2035
~2038
DRIBs, SHE Factory
Operation and development
FRB @ Flerov Lab
R&D
Design and prototyping
Decision
Phased construction
Operation
NICA MPD
Construction
Operation
Upgrade
Operation
NICA SPD
R&D + Design
Construction and commissioning
Operation
Upgrade
NICA-III (SCF, PS)
Formulation of an international scientific program
R&D
Technical design and prototyping
Operation
IBR-3
Technical design and prototyping
Decision
Construction
Operation
Baikal-GVD
Construction and data acquisition
Upgrade and data acquisition
Data acquisition
Neutrino & AP Physics
International scientific program
Life Science
Formulation of an international scientific program and its development
FCC, ILC, GWI, ...
Participation in design research
Decision
Participation in construction
Innovation centre
R&D + Design
Construction
Operation and regular modernization

2ND MEETING WITH SPD DAC: 1.10.21

Meeting of the SPD-DAC with the SPD collaboration

Friday 1 Oct 2021, 10:00 → 11:30 Europe/Moscow

Zoom

Alexey Guskov (JINR)

10:00 → 10:45 **General status of the SPD project**

Speaker: Alexey Guskov (JINR)

meeting2.pdf

10:45 → 11:30 **Update of the SPD setup**

Speaker: Alexander Korzenev (JINR, LHEP)

DAC_meeting_AK.pdf

SPD DAC CONCLUSIONS

… of this and on the previous discussion **we will propose the PAC to approve the SPD CDR** and move forward to the TDR preparation.

We advise the collaboration to be more pro-active with respect to the NICA management, in particular for what concerns the decision/planning of the installation of the Siberian snakes needed by the experiment.

Looking forward to the TDR preparation, we anticipate that we will scrutinize deeply both the organization and the share of responsibilities within the collaboration, as well as the expected performance of the detector, the computing model and the software tools…

A. Bressan, 22.10.21

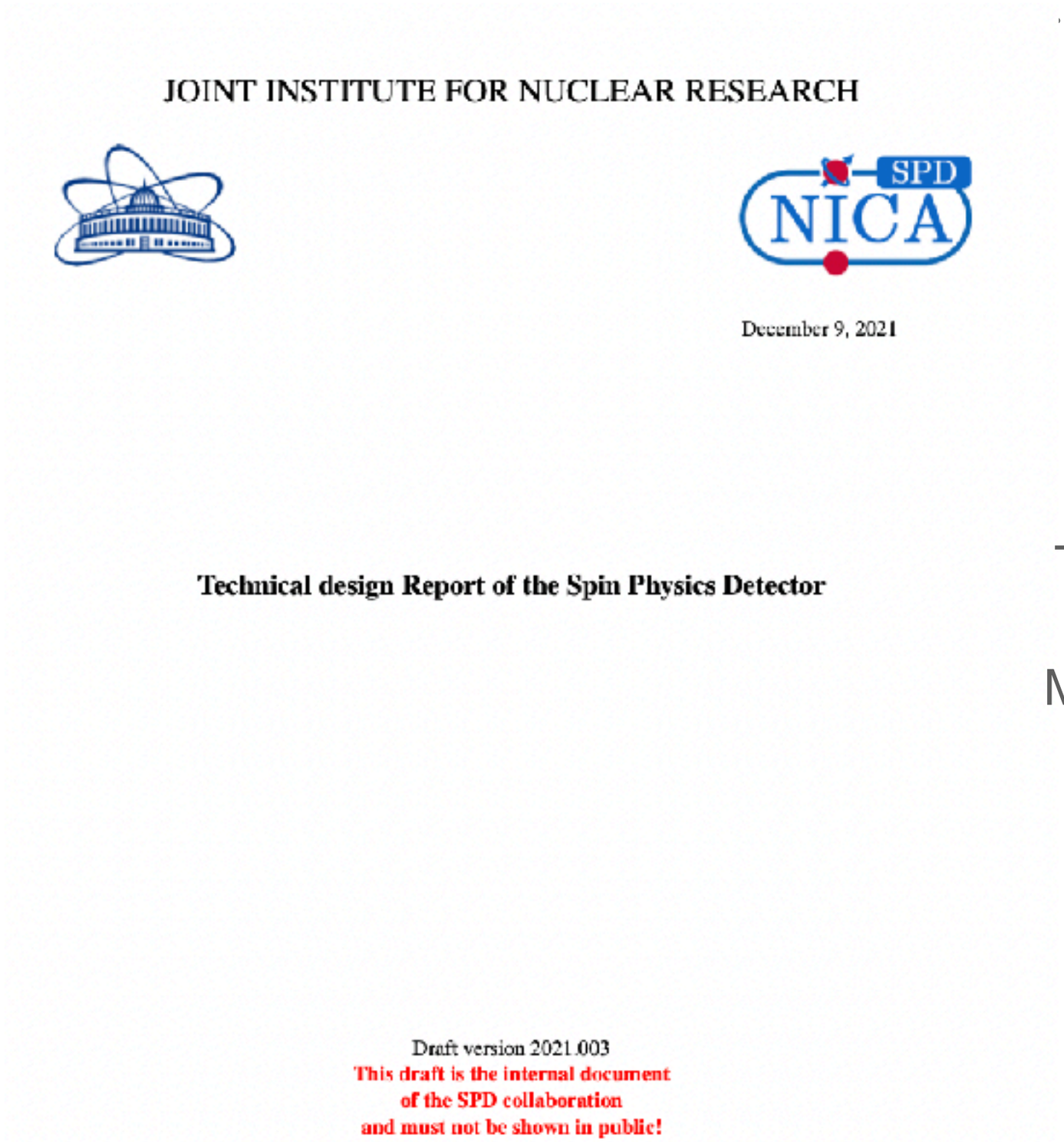
TECHNICAL DESIGN REPORT PREPARATION

Presentation at the summer session of the PAC for Particle Physics: ~20.6.2022

All the materials should be provided 2 months before: ~20.4.2022

The TDR should pass through the Scientific & Technical Board(s) ~10.4.2022

TECHNICAL DESIGN REPORT PREPARATION


JOINT INSTITUTE FOR NUCLEAR RESEARCH

SPD NICA

December 9, 2021

Technical design Report of the Spin Physics Detector

Draft version 2021.003

This draft is the internal document of the SPD collaboration and must not be shown in public!

There is some internal draft.

More advanced drafts will be available in January

MEMORANDUM OF UNDERSTANDING

- *The general part is written and agreed by the participating institutions*
- *The Annexes containing specific obligations of each institution are under preparation*
- *We hope to start the MoU signing procedure in February-March of 2022*

	VD	Straw	TOF	Aerogel	ECAL	RS	Magnet	BBC	ZDC	MM	DAQ+F	SlowC	Comp/soft	MC&phys
YerPhI, Erevan					?									?
IAP NAS, Minsk														
INP BSU, Minsk											?			
Chilie								?			?			
Tsinghua Univ, Beijing					?									
CIAE, Beijing														
InsTec, Havana														
Charles Univ., Prague														
CTU, Prague														
Cairo Univ, Cairo														
Turin Univ,, Turin														
WUT, Warsaw											?			
JINR														
Lebedev Inst, Moscow														
PNPI, Gatchina														
NPI MSU, Moscow														
ITEP, Moscow														
INR, Troitsk														
IHEP, Protvino														
Samara Univ., Samara														
SPbPU, St. Petersburg														?
SPbSU, St. Petersburg														
TSU, Tomsk														
BSU, Belgorod														
iThemba LABS, SA											?		?	
IoP, Belgrade Univ., Belgrade														?
KhNU, Kharkiv														
InSMA, Kharkiv														
SACLAY, Paris														?
INP, Novosibirsk													?	?

SUMMARY

- We are in good shape.
- We have a long way to go. It will be difficult but interesting
- We are open for new collaborators.