

# SIBERIAN CIRCULAR PHOTON SOURCE



# The story of SKIF begins...

08.02.2018 - Session of the President Council on Science and Education in Novosibirsk.

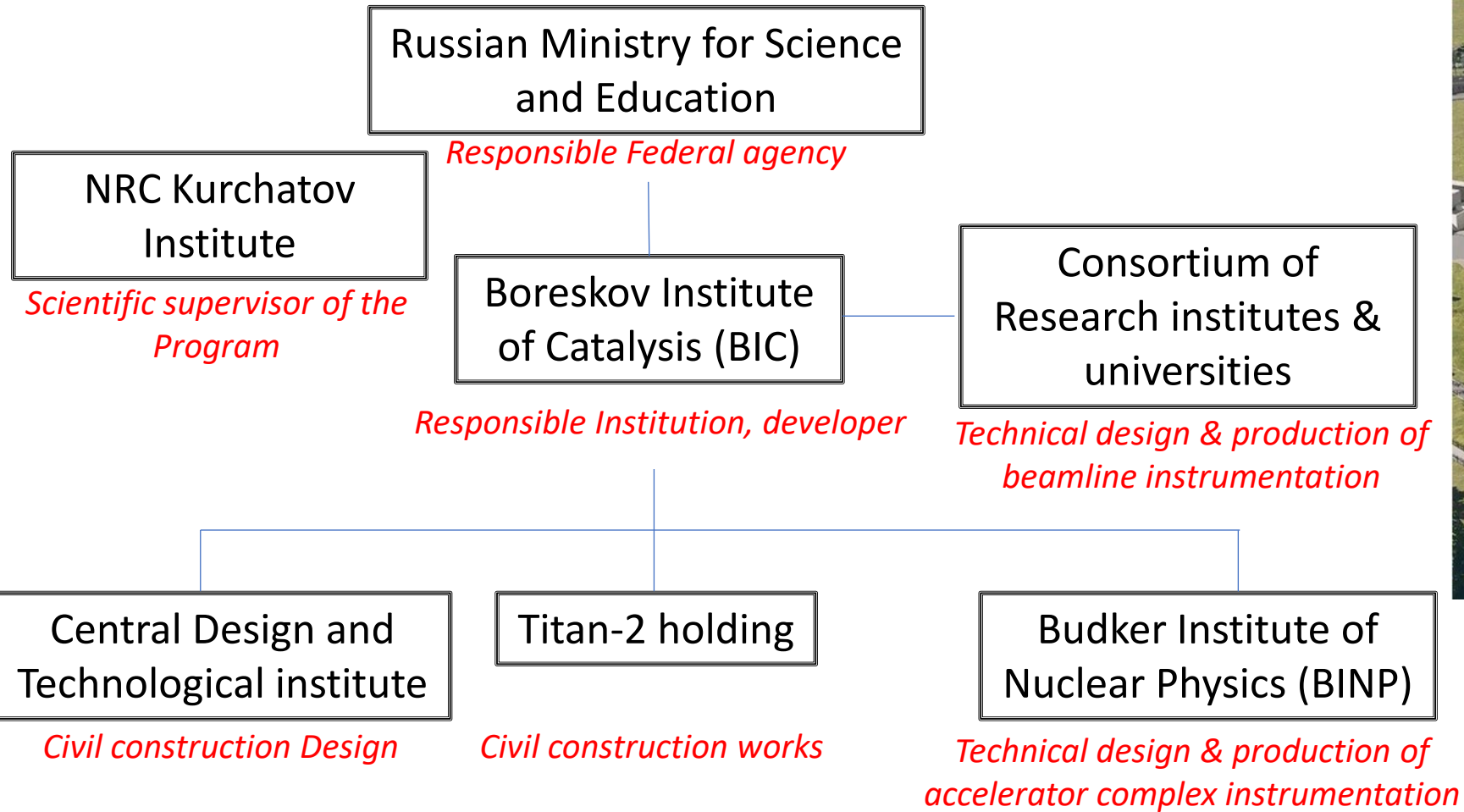
The President of the Russian Federation

Vladimir Putin supports the initiative of Siberian scientists (BINP & BIC) to construct a novel advanced (last generation) synchrotron source in the Novosibirsk region

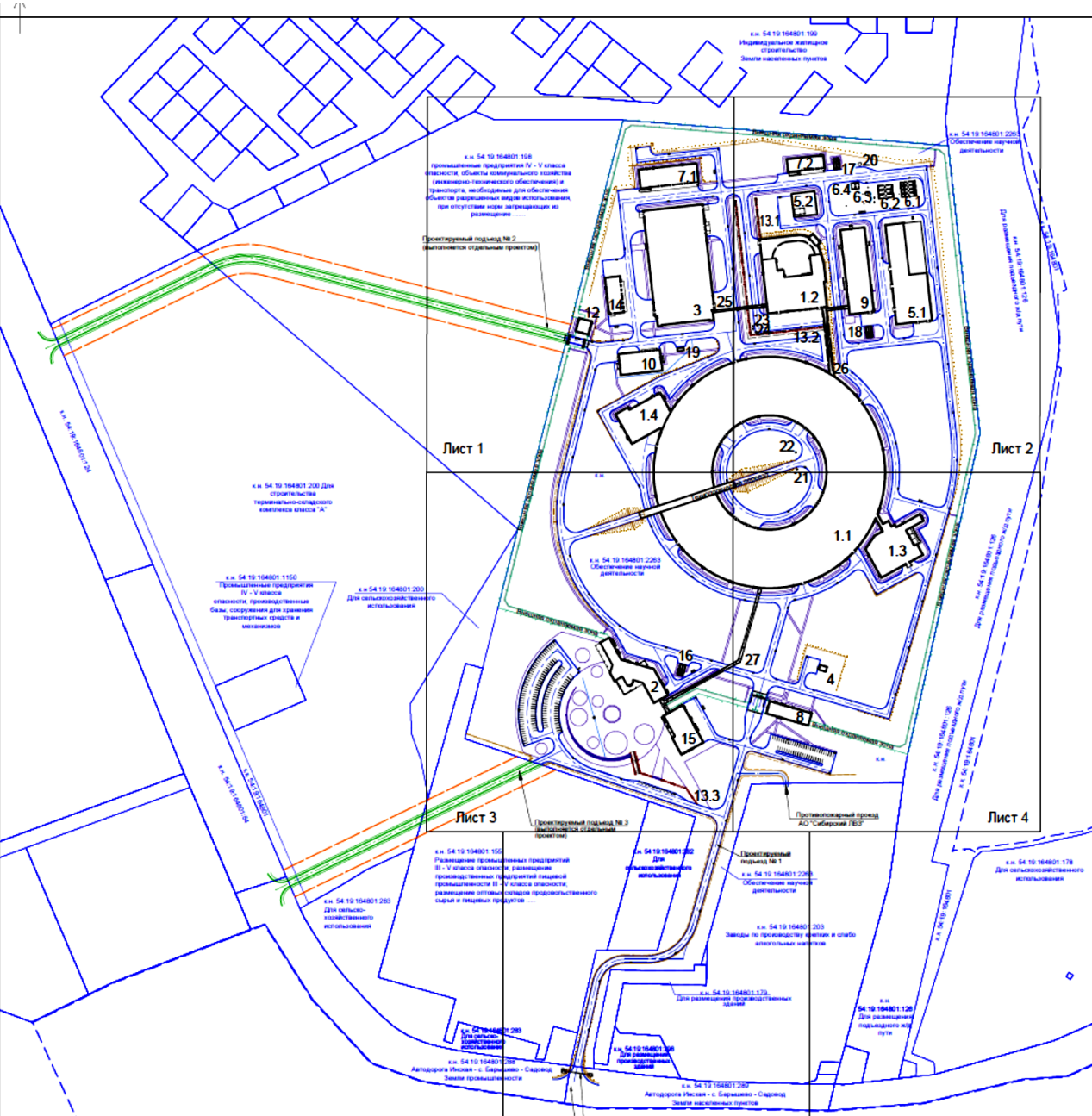


# Key project participants

## Organizational chart



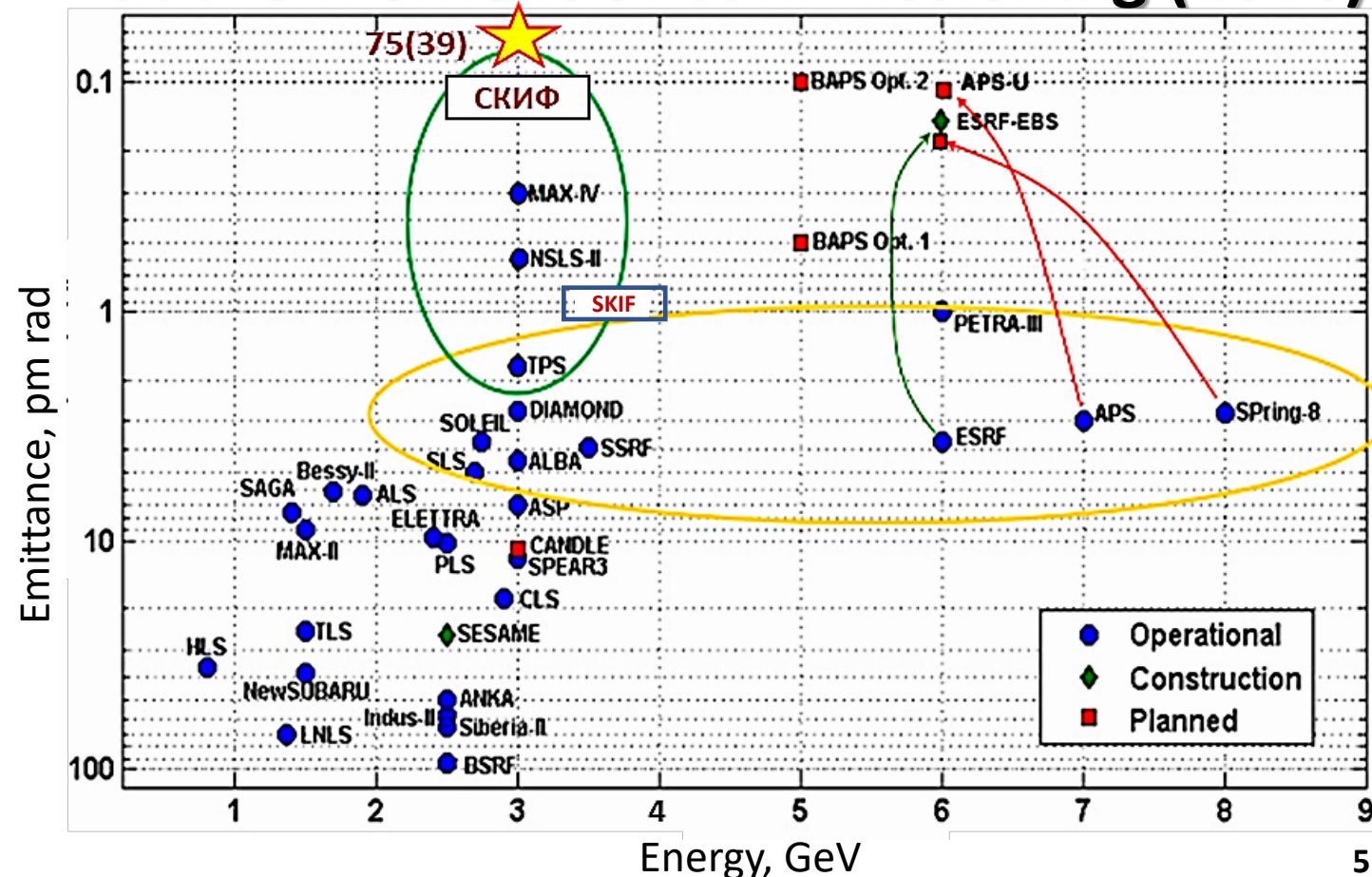
# Synchrotron Radiation Facility SKIF: general info



<b>Cadastral reference</b>	<b>54:19:164801:2263</b>
<b>Total area</b>	<b>~300 000 m<sup>2</sup></b>
<b>Amount of buildings</b>	<b>34</b>
<b>Foot area of buildings</b>	<b>66 300 m<sup>2</sup></b>
<b>Greenery area</b>	<b>134 300 m<sup>2</sup></b>
<b>Electrical power consumption</b>	<b>12 MW</b>
<b>Commissioning</b>	<b>December 2026</b>

- ❑ Diffraction-limited source at photon energies  $\leq 5$  keV
- ❑ Record-high brightness over a photon energy range 4-15 keV
- ❑ Feasibility of hard X-ray beam focusing into submicron spots
- ❑ Availability of 'round' X-ray beams with equal sizes and divergences in horizontal and vertical directions
- ❑ Balanced soft and hard X-ray applications
- ❑ A high coherent fraction

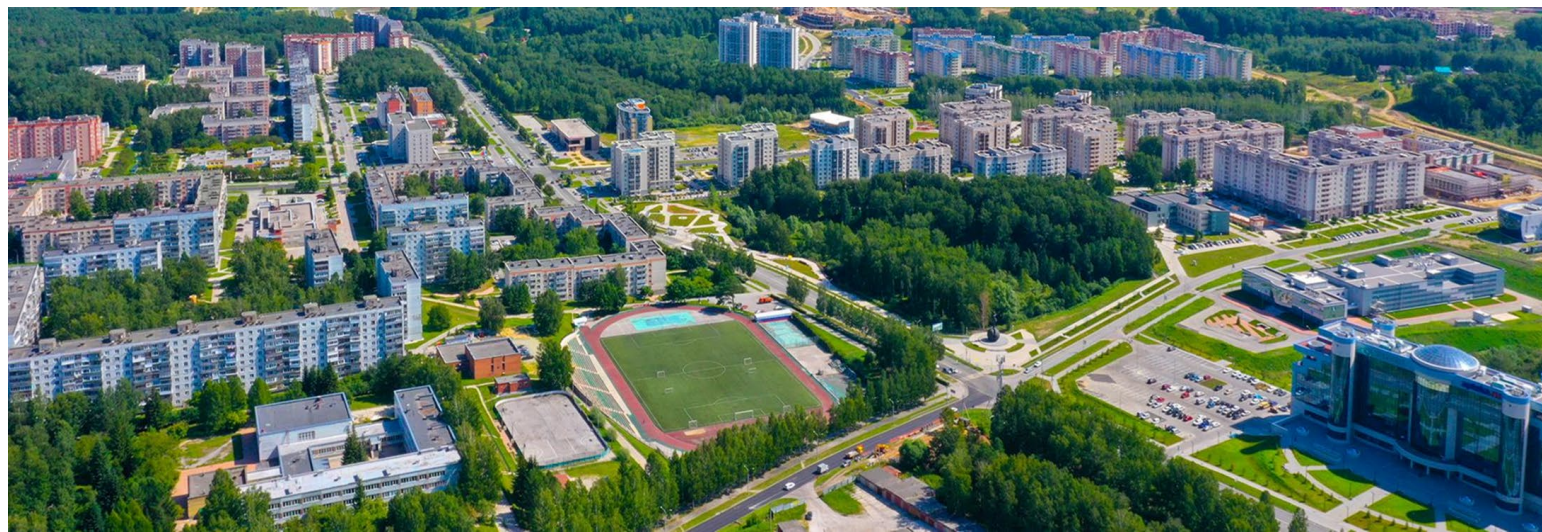
## Record-holding minimum emittance for 3 GeV machines at the moment of commissioning (2026)



# Location



# Science city of Koltsovo



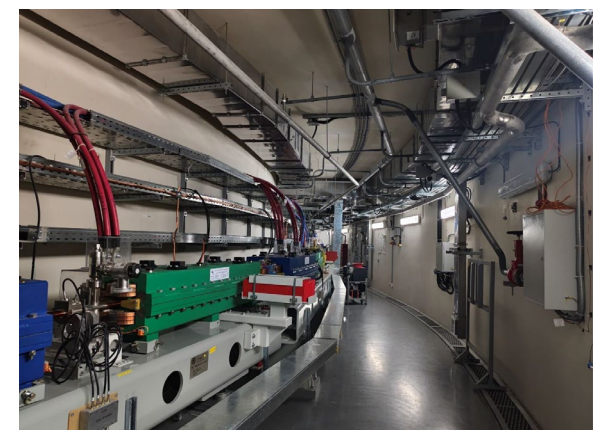
# Construction site



- More than 2,000 builders on site (at the maximum)
- Major civil construction works (except for the storage ring building) finished in Dec. 2024
- Constructive readiness of the storage ring building **by May 2026**
- Commissioning of accelerator complex and 7 first-phase beamlines **by December 2026**
- Start of user operation since **2027**

# Construction site in Koltsovo

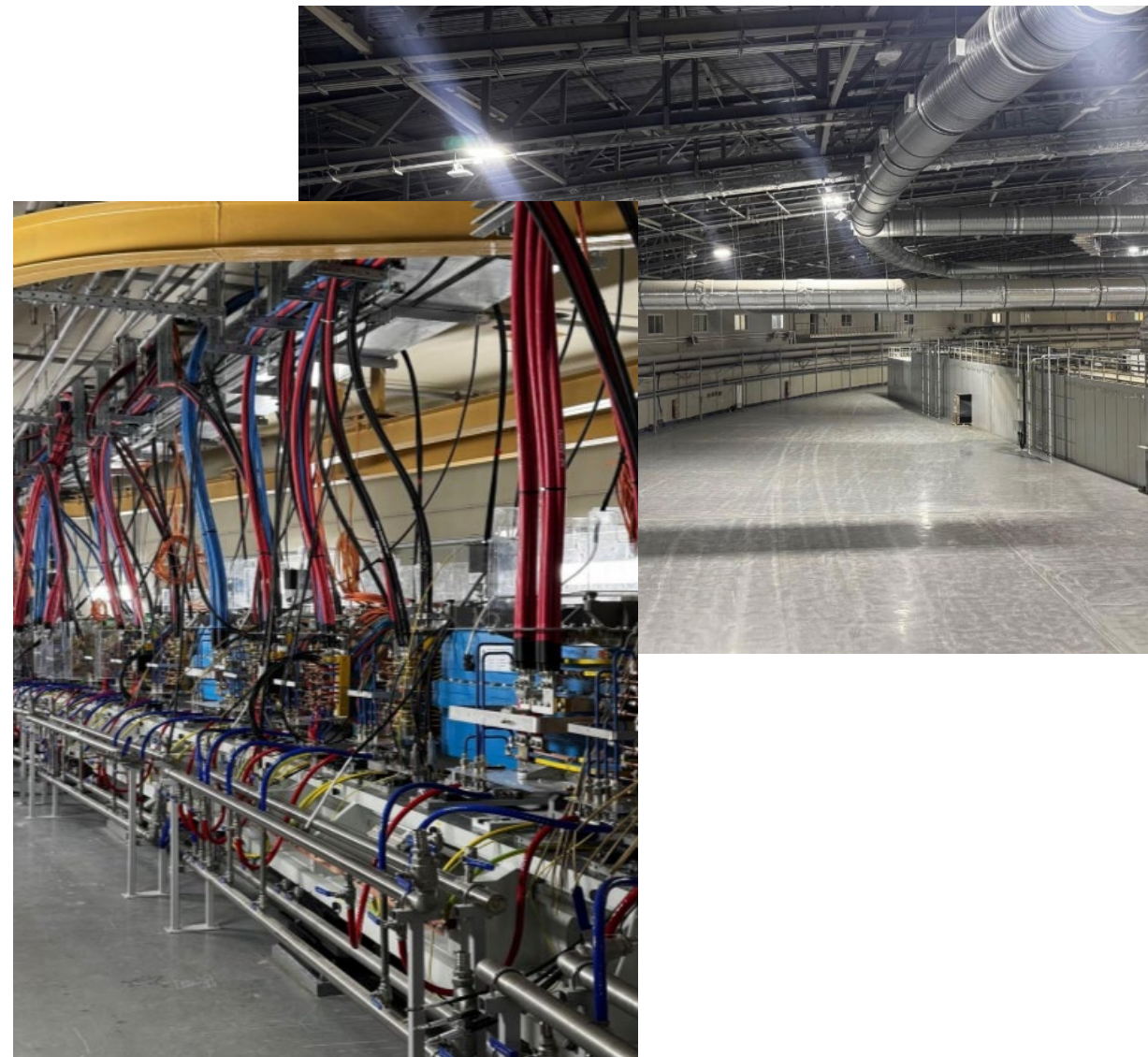
## Injector building (linac + booster)



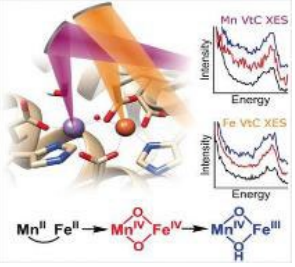
- Assembly of linac and booster started in July, 2024
- Startup of linac in Jan 2025
- Booster at 200 MeV in May 2025
- Booster at 3 GeV in October 2025

# Construction site in Koltsovo

## Main Storage ring building

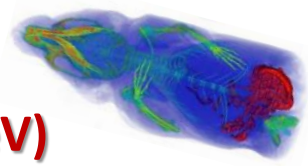


# 1-7 Basic Synchrotron Techniques for Students (4-30 keV)



1-4 «XAFS spectroscopy and magnetic dichroism» (2.5-35 keV)

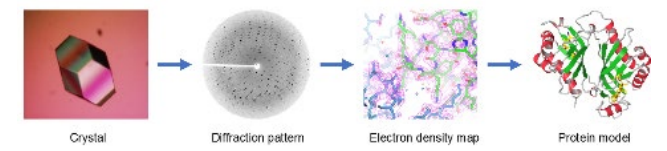
1-5 «Hard X-ray diagnostics & imaging» (25-200 keV)



1-1 «Microfocus» (5-47 keV)

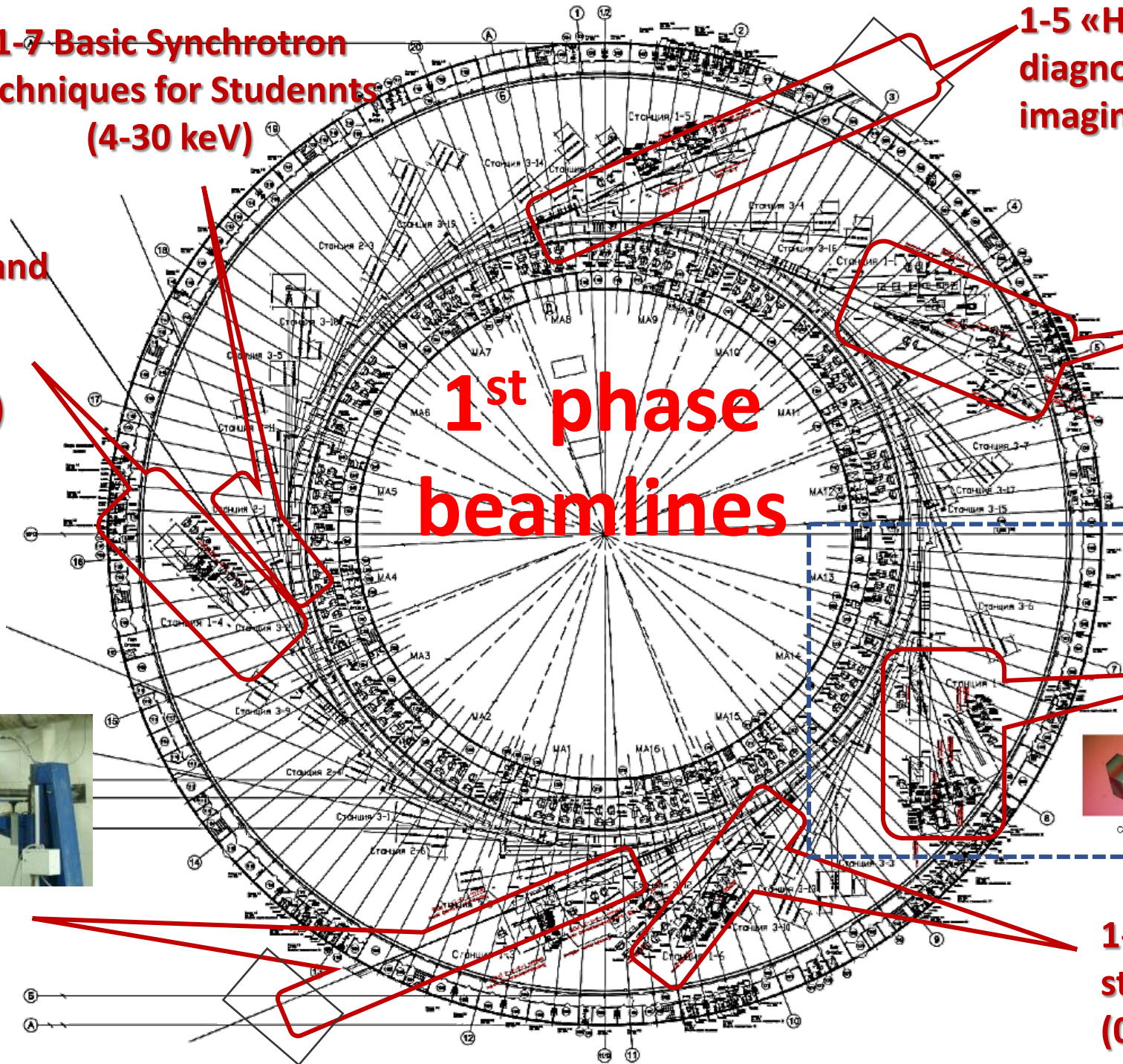
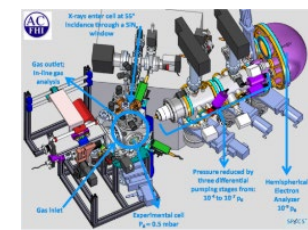
1<sup>st</sup> phase beamlines

1-2 «Structural diagnostics» (5-40 keV)



1-3 «Fast processes» (15-100 keV)

1-6 «Electronic structure» (0.01-2 keV)



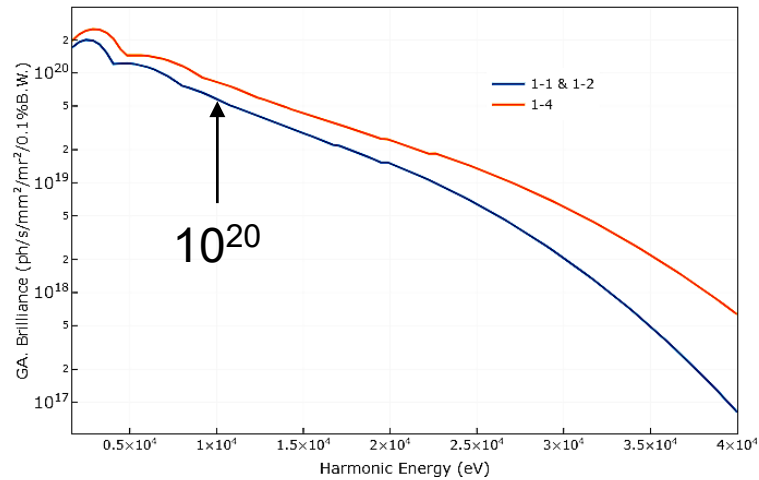
# Insertion devices for the first-priority beamlines

## 1-1 Microfocus

## 1-2 Structural diagnostics

## 1-4 XAFS spectroscopy and magnetic dichroism

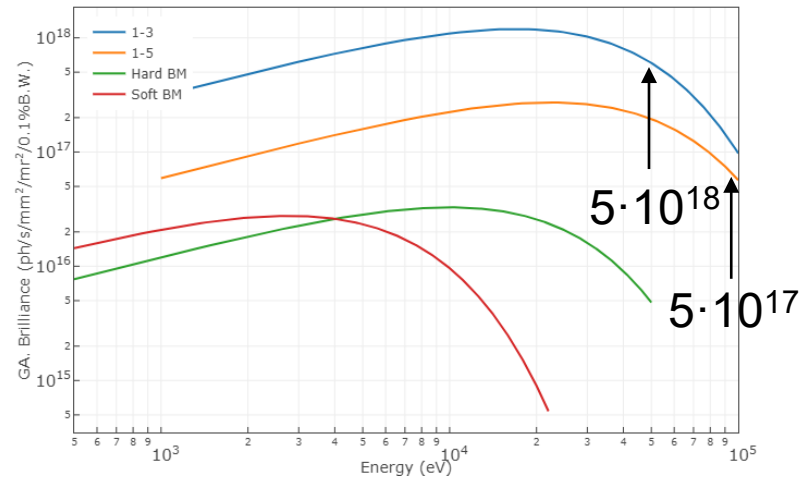
## Superconducting undulators



## 1-3 Fast processes

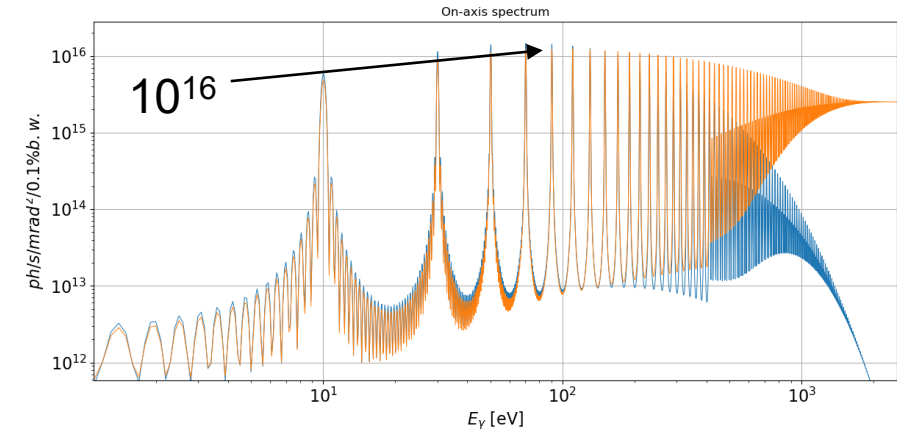
## 1-5 Hard X-ray diagnostics

## Superconducting wigglers

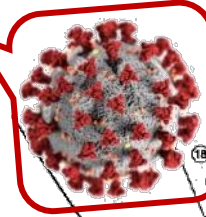


## 1-6 Electronic structure

## «Warm» electromagnetic undulator with switchable plane/elliptical polarization



**Structural virology  
(a satellite building compliant  
with biosafety level III,  
restricted personnel access)**



**A complex of research-  
educational beamlines for local  
universities (NSU and NSTU)**

**Coherent nanoimaging  
(optical length > 120 m)**

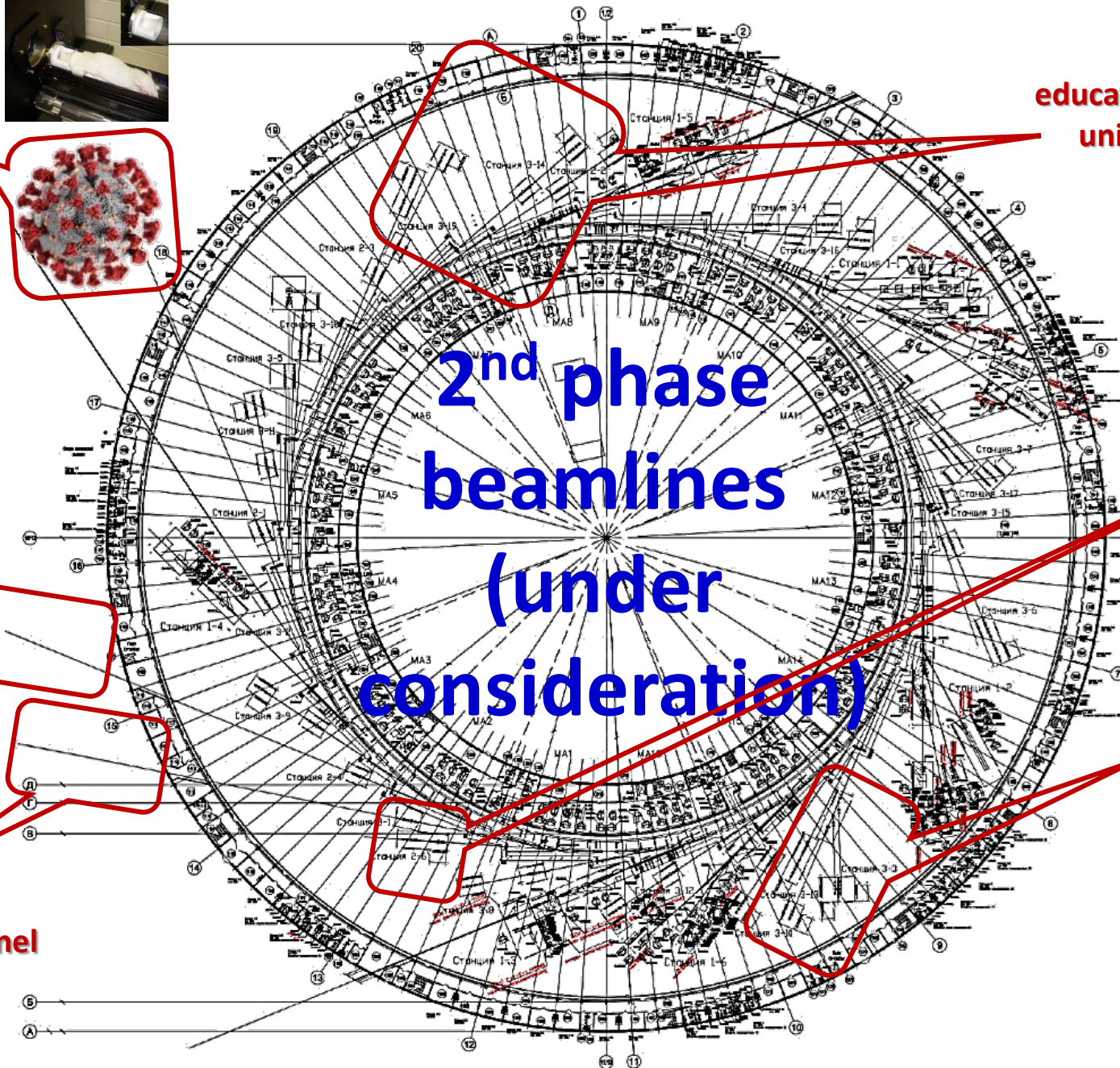
**2<sup>nd</sup> phase  
beamlines  
(under  
consideration)**

**IR nanoscope  
(sSNOM)  
LF-BM +  
edge radiation**

**A complex of dedicated  
macromolecular  
crystallography  
beamlines**

**Beamline for radionuclide  
samples (restricted personnel  
access)**

**...30 beamlines in total  
(14 from IDs in straight  
sections and 16 from  
bending magnets)**





«We plan to accomplish the **technological startup** of yet another powerful facility, viz., SKIF. It would significantly expand capabilities of the Russian research infrastructure».

Vladimir Putin  
Forum of future technologies  
21.02.2025

**USERS ARE CORDIALLY WELCOME!**