



# PIK: WP4 Coordination team

Alexander Ioffe (Work Package Leader)

*Jülich Centre for Neutron Science,  
Forschungszentrum Jülich GmbH, Garching, Germany*

Sergey Grigoriev (Work Package Co-Leader)

*NRC “Kurchatov institute” – Petersburg Nuclear Physics Institute  
Gatchina, Russia*



PETERSBURG NUCLEAR  
PHYSICS INSTITUTE

**Cremlin** Connecting  
Russian and European Measures  
for Large-scale Research Infrastructures



Partners:



Observer:



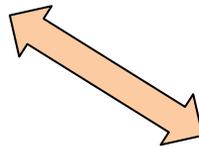
Joint Institute for Nuclear Research



# Network of high-flux neutron sources



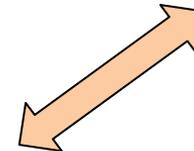
1972 – 2030(?)



2019 – 2060



2022 – 2060



- PIK – a new high-flux neutron source allowing to keep neutron possibilities in Europe after 2030
- This requires the organization of a modern International Neutron Research User Facility around PIK (complimenting ILL and ESS)



### Objectives of WP4:

1. Identification of research interests and needs of EU and Russian partners
  - *Material science Workshop in Kiel (2016)*
  - *Biosoft Workshop in Petershof (2017)*
2. Development of guide lines for general instrumentation concept in cooperation with international partners.
  - *6 subcommittees (for 4 instr. classes + neutron sources&optics + detectors)*
  - *Experts from Russia, Europe and US*
  - *biannual meetings.*
3. Help in developments of state-of-the-art supporting structures at the PIK reactor
  - *Engineering Workshop in Petershof (2018)*

### Achievements of WP4:

- Further development of the user base in Russia
- European users are learning about upcoming possibilities at PIK; Russian scientists are learning about interests of European users
- Recommendations for diffraction, spectroscopy, small-angle scattering and reflectometry instrument suites
- Regular training of young Russian scientists by regular schools and workshops
- Education of Russian scientists in modeling and engineering of neutron instruments
- Data and user policies



## CREMLIN

*Networking activities*



## CREMLIN+

*Design&Manufacturing*

### ***Our recommendations (1):***

#### ***➤ Joint development and acquisition of specific instrumentation***

- High-brilliance cold neutron source
- Bi-spectral neutron guide extraction system
- PIK instrumental suite
- Integrated design of neutron instruments
- Day-one CREMLIN-funded instrument

#### ***➤ Joint development of future technologies for RIs' instrumentation***

- High-resolution neutron detectors

#### ***➤ Staff exchange and thematic courses and workshops***

- Instrument Subcommittees
- Targeted schools&workshops
- Training of Russian and European scientists and engineers
- Special university master programs can be set up in Russia.



**CREMLIN**



**CREMLIN+**

***Our recommendations (2):***

Organization of „International Centre for Neutron Research”  
- a User Facility around PIK

- Open access for European users
- Instrumentation based on:
  - Russian national instrumental program
  - German direct instrumental contribution (bilateral RUS-DE agreement)
  - Contributions from other European and non-European partners
  - Complementarity to ILL and ESS