Achievements within the CREMLIN EU project (WP3 – NICA Ion collider facility) and Recommendations for future joint development of instrumentation for NICA and FAIR

Tandem presentation:

- Vladimir Kekelidze, Director of Veksler and Baldin Laboratory of High Energies Physics, JINR,Dubna
- Jürgen Eschke, CBM Resource Coordinator and CREMLIN WP3 Leader, FAIR/GSI, Darmstadt

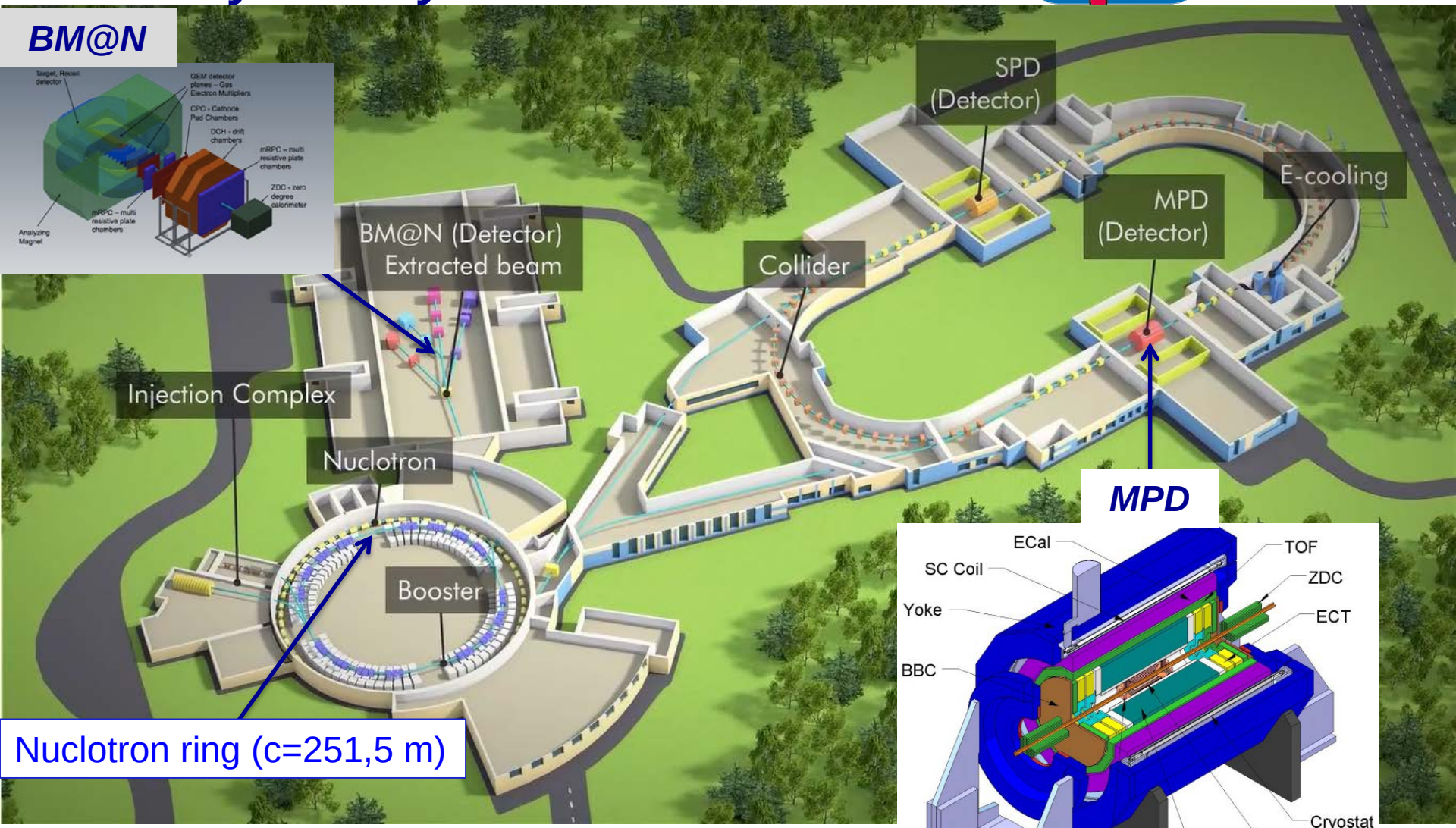
Long lasting Cooperation between GSI and JINR

Selection of events:

- Since 1990: joint experiments on the production of superheavy elements
- Since 2000: Participation of JINR groups in the development of FAIR accelerators and experiments
- Since 2006: Participation of GSI scientists in preparation of the NICA physics program
- Since 2008: MoU on scientific cooperation between GSI and JINR for FAIR and NICA
- 2008, 2013: CBM Collaboration Meetings at JINR

- 2011: BMBF-JINR Coordination Committee Meeting
- 2015: Collaboration agreement FAIR- JINR on the construction of 300 magnets
- 2016: NICA-FAIR Symposium on Joint Science and Academic Training

Multi Purpose Detector to study heavy-ion collisions at the NICA collider



Civil Construction bld.17

Aug 2017

> 5000 piles are already pressed in
> 20k m³ concrete works are done
metal constructions – in progress

readiness for equipment installation in the MPD Hall - 2018

Kick-off meeting on formation of the MPD and BM@N Collaborations

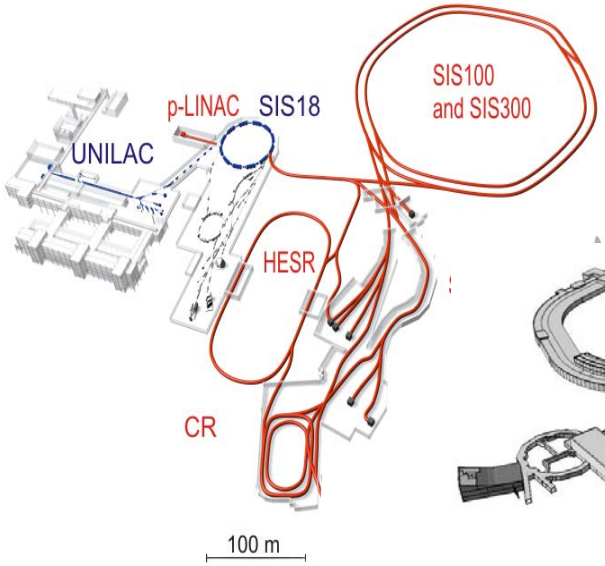
Dubna on 11-13 April, 2018

https://indico.jinr.ru/conferenceDisplay.py?ovw=True&confId=385

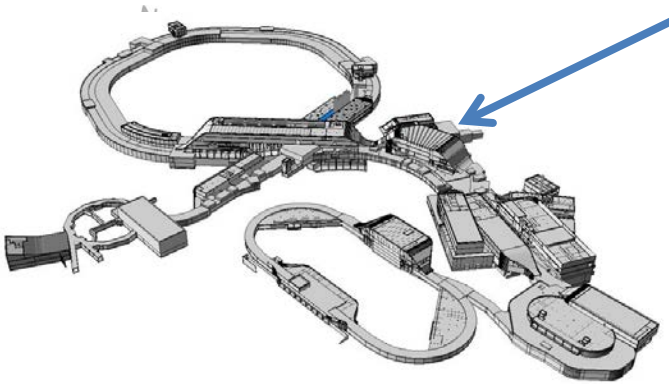
Facility for Antiproton and Ion Research

ESFRI Landmark

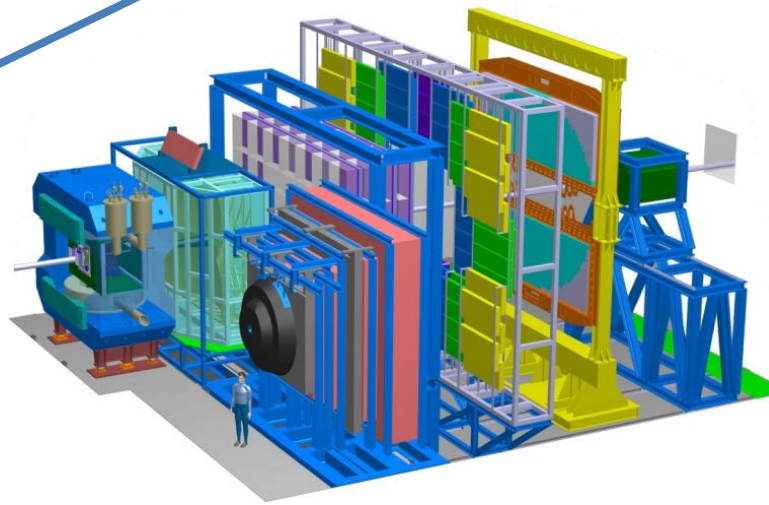
in Darmstadt, Germany



FAIR accelerator complex

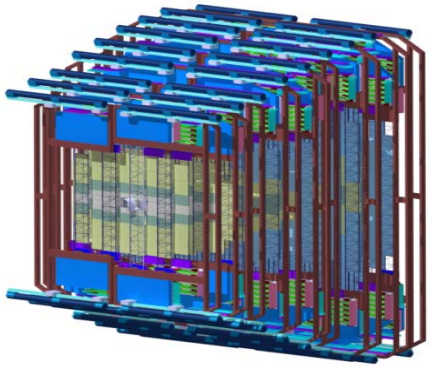


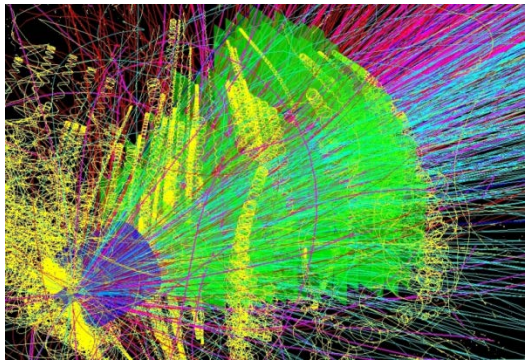
Compressed Baryonic Matter experiment (CBM)



FAIR civil construction – February 2018

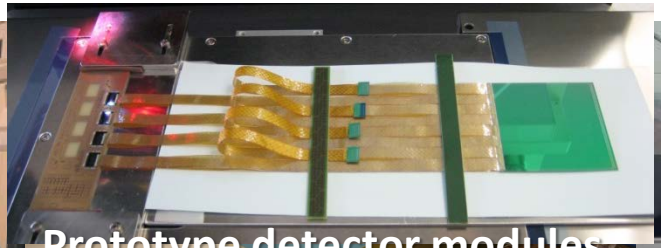
CBM Silicon Tracking System (STS)





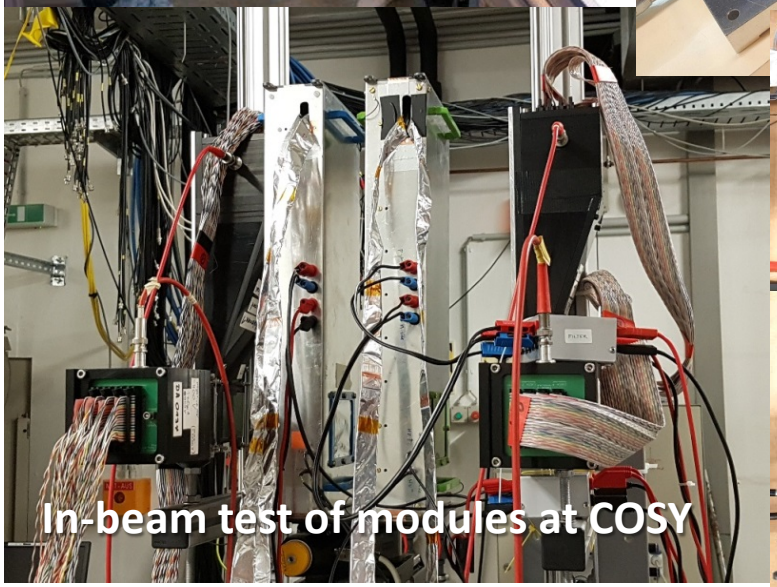
Joint development of Silicon Tracking Systems – Achievements WP3 CREMLIN EU project–

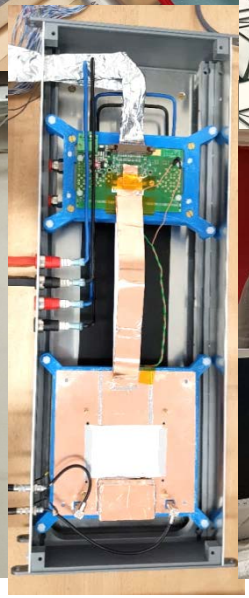

Assembly lab – JINR-VBLHEP


Prototype detector modules


Assembly lab – GSI/Tübingen


Detector ladder assembly


In-beam test of modules at COSY




STS team at COSY

Joint plans for the continuation of the collaboration

Proposed workpackages for CREMLIN+

1. Joint development of instrumentation for NICA and FAIR/CBM:

1.1. Integration, installation, and test of Silicon Trackers for NICA and CBM

1.2. Development of common software packages for simulation and data analysis, participation in physics performance studies

1.3. Development of the data acquisition chain, of data preprocessing and computing procedures

1.4. Development and construction of beam monitors, target chamber, and beam pipe for NICA and CBM

1.5. Development and construction of Zero Degree Calorimeters for NICA and CBM

1.6. Coordination of joint activities

2. Joint development of future technologies for NICA and FAIR

2.1. Development of CMOS technologies for high-rate Silicon trackers

2.2. Development of new methods for effective integration of MAPS sensors in large-area tracking-detector systems with extremely low material budget for NICA and FAIR.

2.3. Studies of advanced data read-out and analysis concepts

2.4. Physics performance studies for open charm measurements

Inclusion of additional European FAIR-CBM collaborators from Czech Republic, France, Germany, Hungary, Poland and Ukraine, as well as additional Russian collaborators