Kraków, June 28, 2021

Cyclotron Center Bronowice IFJ PAN Krakow
Call for Proposals and Letters of Intent Deadline: August 15, 2021

This is a call for letters of intent and proposals for experiments at the proton PROTEUS C- 235 cyclotron at CCB IFJ PAN, as well as request for reports on recently performed experiments. The CCB International Advisory Committee (IAC) meeting, during which the proposals and LoIs will be evaluated, is planned to be held via ZOOM on August 27, 2021.
At CCB, a proton beam with energies 70-230 MeV and intensities up to a few nA is available for nuclear physics experiments. As the priority of the CCB is the hadron therapy, depending on the medical plans, the beam time for the nuclear physics experiments will be organized in campaigns, mainly in the night shifts or in the weekends.

At present, two main detection systems are available:
1. LaBr3 and PARIS arrays coupled to the Kraków Triple Telescope Array (KRATTA) and DSSSD silicon detector:

- **LaBr3 array** – an array of 4 large volume LaBr3 detectors for detection of high- energy gamma-rays (up to 25 MeV);
- **PARIS array** – an array of 2 PARIS clusters (each possessing 9 LaBr3_NaI phoswich detectors). *Attention: Please note that the PARIS detectors might be not available in 2022 and 2023 for the experiments at CCB.*
- **KRATTA** – a multi-modular array for charged-particle detection (which can be used in different configurations); it covers a broad energy range of protons that can be detected, from ~3 to 260 MeV, and provides mass resolution up to mass number A~10;
- **DSSSD** - Double Sided Silicon Strip Detector: active area: 50mm x 50mm, no. of channels: 32 (16 per side), thickness: 1.5 microns, full depletion 200 V.

2. **BINA** - The Big Instrument for Nuclear Data Analysis – this detector is particularly suited to study the *p*+*d* breakup reaction. BINA is composed of two major parts: the forward wall, which measures the energy, the position, the polarization of proton and deuteron at scattering angles in the range 10°-35°, and the backward ball part, which covers the rest of the polar angle up to 165°.

In addition, there are possibilities to perform **detector's characterizations** with proton beam.

The proposals should contain a list of participants, an abstract, the basic physics goals of the experiment, a discussion of what exactly will be done in the measurement and any relevant references. Technical details of the proposed measurement and count-rate estimates should also be included. The proposals should be kept to a reasonable length, with a 5-page maximum. Please note that a liaison for the experiment from IFJ PAN, who shall also be a participant, has to be indicated. Please inform about previous experiments performed at CCB, if relevant. Please also note that each publication with the results from CCB should include as co-authors the team from IFJ PAN that participated in the execution of the experiment.

The letters of intent are aimed at proposing new lines of research possibly based on new detection systems. They should also include description of physics goals of the proposed

studies as well as technical details of detection setup and considerations regarding its mounting on the beam line. Please indicate also whether the proposal is part of a PhD thesis project.

You might be invited to present your report or proposal/LoI at the IAC meeting.

CCB International Advisory Committee
Faical Azaiez (iThemba Labs, South Africa), Angela Bracco (University of Milano and INFN, Italy), Bogdan Fornal (IFJ PAN, Kraków, Poland), Zsolt Fülöp (ATOMKI, Debrecen, Hungary), Muhsin Harakeh (KVI-CART, Groningen, Netherlands) – CHAIR, Robert Janssens (University of North Carolina, Chapel Hill, USA), Stanisław Kistryn (Jagiellonian University, Kraków, Poland), Marek Lewitowicz (GANIL, Caen, France), Adam Maj (IFJ PAN, Kraków, Poland), Krzysztof Rusek (Warsaw University, Poland), Hideyuki Sakai (RIKEN, Japan), Christoph Scheidenberger (GSI, Germany), Nicolae Victor Zamfir (IFIN-HH, Bucharest, Romania), Wiktor Zipper (University of Silesia, Katowice, Poland) .

Please feel free to contact:

- Maria Kmiecik (maria.kmiecik@ifj.edu.pl) with questions concerning PARIS- LaBr3-KRATTA setup;
- Jerzy Łukasik (jerzy.lukasik@ifj.edu.pl) with specific questions concerning KRATTA;
- Adam Kozela (adam.kozela@ifj.edu.pl) with questions concerning BINA;
- Michał Ciemała (michal.ciemala@ifj.edu.pl) with questions concerning detectors in-beam characterizations;
- Mirek Zięblíński (miroslaw.zieblinski@ifj.edu.pl) with all technical and infrastructure questions;
- Adam Maj (adam.maj@ifj.edu.pl) with questions that are of more general nature.

IMPORTANT: E-mail submissions should be sent to adam.maj@ifj.edu.pl **before midnight (CET) on August 15, 2021**.

More information at http://experimentsccb.ifj.edu.pl/,

We are looking forward to interesting proposals for research at CCB IFJ PAN.

Sincerely,
Adam Maj