**Expression of Interest (EOI)**

**Questionnaire**

**Please indicate the name of the contact person for this submission:**

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**Please indicate all institutions collectively involved in this submission of interest:**

Czech Technical University in Prague (CTU Prague), Nuclear Physics Institute of the Czech Academy of Sciences (NPI CAS), Charles University (CU)

**Please indicate the items of interest for potential equipment cooperation:**

In the STAR experiment, CTU Prague and NPI CAS are responsible for ZDC maintenance and operation, preparation of SlowControl software for EMCal and software testing. In addition, CTU Prague has experience with R&D and construction of silicon based detectors, we have developed a wide range of silicon detectors in radiation-tolerant ASIC development in 180 (SoI), 150 and 65 nm: hybrid detectors, silicon strip detectors and monolithic active pixel sensors (MAPS). Charles University has experience in testing and assembling calorimeters based on PbWO4 crystals and is already part of EoI of EEEmCal. In summary, we see potential for cooperation in ZDC preparation, EMCal preparation and Silicon Tracking and Vertex detectors.

**Please indicate what the level of potential contributions are for each item of interest:**

For all specified detector systems (ZDC, EMCal, Silicon tracking/vertexing) we envision:

- in kind labour contributions for detector R&D, testing, quality assurance, commissioning and operations.

- detector slow control system related developments

In addition, we would like participate in preparation of physics program.

**Please indicate what, if any, assumptions you made as coming from the EIC Project or the labs for your items of interest:**

CTU Prague has Center of Applied Physics and Advanced Detection Systems (CAPADS, capads.fjfi.cvut.cz), where silicon based detector development and related activities can take place. NPI CAS has cyclotron, mictotron and tandetron facilities that were used in past for radiation hardness tests and PbWO4 crystal testing. In addition, we anticipate taking part in onsite activities at BNL.

**Please indicate the labor contribution for the EIC experimental equipment activities:**

The time commitment of Charles University team members is specified in EoI of EEEmCal. The time commitment of members of the CTU Prague and NPI CAS in the EIC efforts described in this EoI is anticipated to be as follows:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Institution Name | Professor | Research Professor | Staff Scientist | Postdoc | Graduate Student | Undergrad. student | Engineer | Designer | Technician | Total Sum |
| CTU Prague | 0.25 |  | 1 | 1 | 1 | 0.4 |  |  |  |  |
|  |  | 0.7 |  | 1 |  |  | 0.7 |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | 6.05 |
| NPI CAS |  |  | 1 | 1 | 1 | 0.4 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | 3.4 |
|  |  |  |  |  |  |  |  |  |  |  |

We anticipate the duration of this collaborative effort to cooperate on the EIC Project as it indicated in the table above to start at the design phase (from 2023) and to be for a period of seven years. The period of 2023-2029 is due to requested funding for this period to support the collaboration of the Czech Republic and BNL.

In the period 2021-2022, we estimate following yearly contribution to EIC activities of CTU Prague and NPI CAS: CTU Prague: 0.1 professor and 1.0 postdoc; NPI CAS: 0.3 staff scientist.

The contribution of Charles University to EIC has been already specified in EoI of EEEmCal and it is as following: professor 0.1 FTE, staff scientist 0.4 FTE, postdoc 0.2 FTE, graduate student 0.1 FTE, undegraduate student 0.4 FTE, engineer 0.1 FTE, designer 0.2 FTE, technician 1.5 FTE.

**Please indicate if there are timing constraints to your submission:**

Due to ongoing commitments to RHIC experiments and available funding we can contribute to the EIC project in 2021 and 2022 in a limited scope, see above. RHIC will be operated till cca 2025 and then analysis of data would continue. However, already from 2023 we anticipate increasing commitment to EIC. In 2023-2025 we would share our commitment also with running RHIC experiments, and we expect fully focus to EIC in about 2026.

**Please indicate any other information you feel will be helpful:**

The current funding of activities of the Czech Republic at BNL approved in 2016 is ending in 2022. We are requesting renewal of the funding from the Ministry of Education, Youth and Sports of the Czech Republic for the next funding period (2023-2029). This will allow us to include explicitly all EIC related activities.