

## **Toward a bilateral cooperation between KACST and FZJ**

**(06.03.2019, via Skype)**

This document includes the minutes of the “unofficial” skype, video/audio, conference between the Institute of Nuclear Physics IKP-1, Research Center Jülich (FZJ) in Germany and the Radiation Detector Technology Institute, King Abdulaziz City for Science and Technology (KACST) in Saudi Arabia.

The strategic objective of the meeting was to discuss a work-frame towards establishing a bilateral cooperation/agreement between IKP-1-FZJ and KACST.

The specific objective is to work together on developing and validating the performance of the light readout techniques, SiPMs, which will be used in various experiments in both institutes.

### **- Participants:**

- Prof. Dr. Ibtesam Badhrees from KACST.
- Prof. Dr. James Ritman (head of the Institute of Nuclear Physics, IKP-1), Dr. Dieter Grzonka and Dr. Tamer Tolba from IKP-1-FZJ.

### **- Key points from the meeting:**

- Prof. Ritman started by introducing the FZJ scientific areas in general and current IKP/IKP-1 physics projects. The layout of IKP-1 scientific program focuses on *detector development and data analysis for particle physics experiments*.
- Prof. Badhrees followed by introducing the scientific program of KACST. She spent some time introducing new KACST strategy within the kingdom vision 2030. The layout of KACST strategy focuses on establishing strong bilateral agreements with distinguished international institutes and universities. She added that the first phase of vision 2030 is vision 2020, which is aiming for knowledge and technology transfer to the kingdom. She made it clear that she applies for grants for her own projects. The decisions on the accepted proposals are expected to be within the next two months.

### **- The “preliminary” general frame of the cooperation:**

- Prof. Ritman proposed to define the physics/work program first. He also supports the idea of establishing multi/two time scale cooperation.
  - 1- Regarding the project topic, the discussion was directed mainly towards joining IKP efforts in light readout systems development and performance study, especially the SiPMs (which can be used in light readout of scintillator material (e.g. plastic scintillators)). This can be achieved by joining the SiPM radiation hardness studies (lead by Dr. Tolba) and/or SiPM performance investigations (lead by Dr. Grzonka) among the current IKP-1 R&D programs.
  - 2- The cooperation must go through two time scale phases;
    - a. The short time scale phase, phase-I, with well-defined physics program will focus on one of the projects mentioned in point 1 above. According to Prof. Badhrees, this strategy fits directly to her plans for 2020 vision.

- b. Phase-I will be based on:
  - i) Personnel exchange between KACST and Jülich.
  - ii) Sending a Master or PhD student to work in Jülich on the project (with the aim that this student returns to Saudi Arabia after the end of phase I and be the seed of the 2<sup>nd</sup> phase),
  - iii) No specific standard/template for the agreement is needed for phase-I, i.e. the agreement document will be produced by the agreements resulted from the direct talks of the two partners (i.e. from KACST and Jülich),
  - iv) No project-related financial commitments will be needed for phase-I, except the travel exchange financial requirements (each institute supports financially the visit of the other partner). This point will be defined in detail during the direct talks.
- c. The longer time scale phase, phase-II, with the aim to join a large international collaboration, e.g. PANDA at FAIR with KACST taking on major responsibility. Prof. Ritman as a previous spokesperson of PANDA can help for the future talks on this topic. The student/s will be the seed for the established KACST group with the knowledge that he/she/they bring back to the kingdom after the first period in Germany. This will include but not limited to:
  - i) Building a SiPM laboratory in KACST.
  - ii) Signing a comprehensive bilateral cooperation between KACST and e.g. FAIR.

Since this is a later stage, i.e. after 2020, no specific discussions or commitments can be discussed now.

- 3- Dr. Grzonka proposes that the German group makes the first trip to KACST to introduce the project/s currently running in IKP-1-FZJ and for direct talks of the needs and expectations of the bilateral agreement. This will be followed by a visit from KACST group to Germany in order to be introduced to the labs and the project on ground.

While the time frame was not discussed in detail, Dr. Tolba proposes that the first visit from Jülich to KACST could be during April 2019 and the visit from KACST to Jülich could be during the early summer (i.e. after mid-June).

- **List to do:**

- Prof. Badhrees will discuss with the VP of KACST output of this meeting. She will also follow-on on the decisions on the project grants.
- Dr. Tolba, and at later stage Prof. Ritman, will check the status of an existing Saudi student at Darmstadt University and the possibility that he can join the project within his activity in the University.