**IceCube Institutional Memorandum Of Understanding (MOU)**

**Scope of Work**

**Sungkyunkwan University**

**Carsten Rott**

**Ph.D Scientists** (Faculty Scientist/Post Doc Grads): **2** (1 1 5)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **Labor Cat.** | **Names** | **WBS Level 3** | | | **Tasks** | | | **WBS 2.1** | | | **WBS 2.2** | | | **WBS 2.3** | | | **WBS 2.4** | | | **WBS 2.5** | | | **WBS 2.6** | | | **Grand Total** | | |
| Program Coordination | | | Detector Maintenance & Operations | | | Computing & Data Management | | | Data Processing & Simulation | | | Software | | | Calibration | | |
| KE | ROTT, CARSTEN | Online Filter | | | BSM WG Co-Lead | | |  | | | 0.25 | | |  | | |  | | |  | | |  | | | 0.25 | | |
|  | Education & Outreach | | | Outreach | | | 0.05 | | |  | | |  | | |  | | |  | | |  | | | 0.05 | | |
|  |  | Administration | | | Speakers Comm member | | | 0.10 | | |  | | |  | | |  | | |  | | |  | | | 0.10 | | |
|  | **ROTT, CARSTEN Total** | | |  | | | **0.15** | | | **0.25** | | |  | | |  | | |  | | |  | | | **0.40** | | |
| PO | BOSE, DEBANJAN | Ice Properties | Photon tracking / ice-properties calibration | | |  | | |  | | |  | | |  | | |  | | | 0.20 | | | 0.20 | | |
|  |  | Engineering Support and R&D | Reconstruction tools | | | 0.15 | | |  | | |  | | |  | | |  | | |  | | | 0.15 | | |
|  |  | Online Filter | WIMP-L2 | | |  | | | 0.20 | | |  | | |  | | |  | | |  | | | 0.20 | | |
|  | **BOSE, DEBANJAN Total** | | |  | | | **0.15** | | | **0.20** | | |  | | |  | | |  | | | **0.20** | | | **0.55** | | |
| GR | IN, SEONGJUN | Detector Monitoring | Detector Monitoring | | |  | | | 0.03 | | |  | | |  | | |  | | |  | | | 0.03 | | |
|  | Online Filter | Online filter development & testing (Low-up filter) | | |  | | | 0.20 | | |  | | |  | | |  | | |  | | | 0.20 | | |
| **IN, SEONGJUN Total** | | |  | | |  | | | **0.23** | | |  | | |  | | |  | | |  | | | **0.23** | | |
| Dujmovic, Hrvoje | Detector Monitoring | Detector Monitoring | | |  | | | 0.03 | | |  | | |  | | |  | | |  | | | 0.03 | | |
| Online Filter | Online filter development & testing (Full Sky Starting Filter) | | |  | | | 0.20 | | |  | | |  | | |  | | |  | | | 0.20 | | |
| **Dujmovic, Hrvoje Total** | | |  | | |  | | | **0.23** | | |  | | |  | | |  | | |  | | | **0.23** | | |
| Jeong, Minjin | Detector Monitoring | Detector Monitoring | | |  | | | 0.03 | | |  | | |  | | |  | | |  | | | 0.03 | | |
| Detector Calibration | DOM Sensitivity in Ice | | |  | | |  | | |  | | |  | | |  | | | 0.35 | | | 0.35 | | |
| **Jeong MinjinTotal** | | |  | | |  | | | **0.03** | | |  | | |  | | |  | | | **0.35** | | | **0.38** | | |
| Kim, Myoungchul | Detector Monitoring | Detector Monitoring | | |  | | | 0.03 | | |  | | |  | | |  | | |  | | | 0.03 | | |
| **Kim Myoungchul Total** | | |  | | |  | | | **0.03** | | |  | | |  | | |  | | |  | | | **0.03** | | |
| **SUNGKYUNKWAN Total** | | | | | | | **0.30** | | | **0.97** | | |  | | |  | | |  | | | **0.55** | | | **1.82** | | |

**Faculty:**

Carsten Rott – BSM-wg co-lead, outreach, Speakers committee member.

**Scientists and Post Docs:**

Debanjan Bose - Ice-property studies and reconstruction tools low energy events neutrino events, maintenance of the WIMP-L2 filter.

Analysis topics: involving data from DeepCore and physics feasibility studies. Neutrino Oscillation Tomography studies.

**Ph.D. Students:**

Seongjin In - Detector monitoring, online filter development and testing 20% , maintains the LowUP Filter. Neutrino spectra for dark matter searches

Thesis topic: Solar WIMP search using energy spectral information with IceCube/DeepCore.

Minjin Jeong - Monitoring, Analysis of camera data for the study of ice- properties. Thesis topic: Search for energetic neutrinos from the Sun (secluded dark matter / solar atmospheric neutrinos)

Woosik Kang - Monitoring, Hole-ice and ice-property studies. (50% IceCube)

Hrvoje Dujmovic - Monitoring, maintenance of the FullSkyStarting Filter (FSS). Thesis topic: Search for dark matter decay

JongHyun Kim - Monitoring, Genie simulation studies. Neutrino Oscillation Tomography.

**Diploma/Master Students:**

Myoungchul Kim - Monitoring, Hole-ice and ice-property studies. (50% IceCube)

**Description of planned analysis:**

The SKKU group will focus on analyses involving data from DeepCore and physics feasibility studies for future dark matter and neutrino oscillation spectrometry analyses. The PhD student thesis topics are Solar WIMP searches using energy spectral information with DeepCore and searches for high mass dark matter decays.

**Description of Service work**

The SKKU group will maintain and develop filters related to DeepCore and WIMP analyses. We will investigate hole ice properties with the goal to advance our understanding of individual DOMs and their local ice environment in studies using down-going muons and flasher data.