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

**Scope of Work**

**South Dakota School of Mines and Technology**

**Xinhua Bai**

**Ph.D. Scientists** (Faculty Scientist/Post Doc Grads): **1** (1 0 3)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 | Xinhua Bai | 2.1.1 Administration | SDSMT Inst. Lead | 0.30 |  |  |  |  |  | 0.30 |
| 2.1.4 E&O | Education & Outreach for neutrino astronomy and IceCube | 0.08 |  |  |  |  |  | 0.08 |
| 2.2.4 Detector Monitoring | IceCube operation monitoring |  | 0.02 |  |  |  |  | 0.02 |
| 2.5.3 Reconstruction & analysis | High energy cosmic rays, prompt leptons, fluctuations |  |  |  |  | 0.50 |  | 0.50 |
| 2.1.2 Engineering and R&D Support | Detector development and testing | 0.10 |  |  |  |  |  | 0.10 |
| **Bai, Xinhua Total** | |  | **0.48** | **0.02** |  |  | **0.50** |  | **1.00** |
| GR1 a) | Emily Dvorak | 2.5.3 Reconstruction & physics analysis | IceTop-InIce combined reconstruction development and apply it to data analysis |  |  |  |  | 1.00 |  | 1.00 |
| **Emily Dvorak Total** | |  |  |  |  |  | **1.00** |  | **1.00** |
| GR2 b) | Diana Silverio | 2.4.2 Simulation production | Prompt muon in UHE cosmic rays and neutrino flavor study |  |  |  | 0.50 |  |  | 0.50 |
| 2.5.3 Reconstruction & physics analysis | Prompt muon in UHE cosmic rays and neutrino flavor study |  |  |  |  | 0.50 |  | 0.50 |
| **Diana Silverio Total** | |  |  |  |  | **0.50** | **0.50** |  | **1.00** |
| GR3 | To be recruited in 2019~20 | 2.4.2 Simulation study | Primary energy and mass sensitive parameters for non-contained EAS events |  |  |  | 0.70 |  |  | 0.70 |
| 2.5.3 Reconstruction & physics analysis | Cosmic ray composition and energy for non-contained EAS events |  |  |  |  | 0.30 |  | 0.30 |
| **3rd PhD grad Total** | |  |  |  |  | **0.70** | **0.30** |  | **1.00** |
| **South Dakota School of Mines & Technology Total** | | | | **0.48** | **0.02** |  | **1.20** | **2.30** |  | **4.00** |

**Note:**

a): Emily Dvorak will graduate in spring 2020. Funded by NSF

b): Diana Silverio starts in 2019 summer. Grad 2 and 3 are in IceCube 2018 proposal.