**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 2)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 | 0.20 |  |  |  |  |  | 0.20 |
| 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  |  |  |  |  | 0.20 |  | 0.20 |
| 2.1.2 Engineering and R&D Support | Detector development and testing  | 0.0 |  |  |  |  |  | 0.0 |
| **Bai, Xinhua Total** |  | **0.28** | **0.02** |  |  | **0.20** |  | **0.50** |
| 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  | For the study of EAS properties and systematics  |  |  |  | 0.20 |  |  | 0.20 |
| 2.5.3 Reconstruction & physics analysis | Improve the IceTop-InIce combined reconstruction  |  |  |  |  | 0.80 |  | 0.80 |
| **Diana Silverio Total**  |  |  |  |  | **0.20** | **0.80** |  | **1.00** |
| **South Dakota School of Mines & Technology Total** | **0.28** | **0.02** |  | **0.20** | **2.00** |  | **2.50** |

**Note:** Changes to the SoW dated on April 29 include (1) Dr. Bai’s FTE is reduced from 1 to 0.5, (ii) canceled the hiring of the 3rd Ph.D. student. This is due to the reduced fund for SDSMT group in the final NSF award.

a): Emily Dvorak will graduate in spring 2020. 100% funded by NSF

b): Diana Silverio starts in 2019 summer. She is funded through the IceCube 2018 proposal for FY2020.