**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 1)

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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** | **Grand Total** |
| Program Management | Detector Maintenance & Operations | Computing & Data Management | Triggering & Filtering | Data Quality, Reconstruction & Simulation Tools |
| KE | Xinhua Bai | 2.1.4 Education & Outreach | Education & Outreach | 0.05 |  |  |  |  | 0.05 |
|  | 2.5.1 Simulation Programs | Muon yield in PeV~EeV showers & systematics |  |  |  |  | 0.15 | 0.15 |
|  | **Bai, Xinhua Total** | |  | **0.05** |  |  |  | **0.15** | **0.20** |
| GR | Emily Dvorak | 2.2.7 Monitoring | Monitoring shift |  | 0.05 |  |  |  | 0.05 |
|  | 2.5.1 Simulation Programs | Atmospheric muon and neutrino flux simulation for cosmic ray and neutrino studies |  |  |  |  | 0.40 | 0.40 |
|  | 2.5.2 Reconstruction, analysis Tools | Prompt signals in high energy air showers |  |  |  |  | 0.55 | 0.55 |
| **Dvorak, Emily Total** | |  |  | **0.05** |  |  | **0.95** | **1.00** |
| **South Dakota School of Mines & Technology Total** | | | | **0.05** | **0.05** | **0.00** | **0.00** | **1.10** | **1.20** |

**Faculty:**

Xinhua Bai – institution lead, education & outreach, mentoring Ph.D. student, muon and muon-bundle simulation and physics

**Grad Students:**

Emily Dvorak (Ph.D. student) – (1) detector maintenance & monitoring, (2) production & analysis of PeV~EeV atmospheric muons and neutrinos for the study of systematics associated with atmosphere seasonal modulation, hadronic interaction models, and cosmic ray composition models, (3) prompt muon analysis tool R&D.

Note: Emily has passed the Ph.D. qualifying exam in August 2015. She is working 100% on IceCube starting from August 25, 2015.