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

**Scope of Work**

**University of Alabama**

**Dawn Williams**

**Ph.D Scientists** (Faculty Scientist/Post Doc Grads): **3** (2 1 1)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Labor Cat.** | **Names** | **WBS L3** | **Tasks** | **Funds Source** | 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 | Williams, Dawn | Administration | Analysis coordinator, ICC member ex officio | NSF M&O Core | 0.30 |  |  |  |  | |  | 0.30 |
|  |  | Ice Properties | Supporting flasher runs and flasher analysis | Inst. In-Kind |  |  |  |  |  | | 0.10 | 0.10 |
|  |  | Detector Calibration | Baseline and charge harvesting | Inst. In-Kind |  |  |  |  |  | | 0.10 | 0.10 |
|  | **Williams, Dawn Total** | |  |  | **0.30** |  |  |  |  | | **0.20** | **0.50** |
|  | Santander, Marcos | Education and Outreach | IceCube Outreach | Inst. In-Kind | .05 |  |  |  |  | |  | 0.05 |
|  | Online Filter | Online DST transmission and analysis | Inst. In-Kind |  | 0.1 |  |  |  | |  | 0.1 |
|  | Detector Monitoring | Online Moon shadow analysis (monitoring) | Inst. In-Kind |  | 0.1 |  |  |  | |  | 0.1 |
|  | Reconstruction | Reconstruction validation - PSF studies | Inst. In-Kind |  |  |  |  | 0.1 | |  | 0.1 |
| **Santander, Marcos Total** | |  |  | **0.05** | **0.20** |  |  | **0.1** | |  | **0.35** |
| PO | Kopper, Sandro | Simulation Software | Simulation Software: low energy double pulse | NSF Base Grant |  |  |  |  | 0.15 | |  | 0.15 |
|  |  | Reconstruction | Reconstruction of tau neutrino events and BSM double pulse events | NSF Base Grant |  |  |  |  | 0.15 | |  | 0.15 |
|  | Distributed Computing Resources | Connecting Alabama GPUs to the cluster | NSF Base Grant |  |  | 0.05 |  |  | |  | 0.05 |
| **Kopper, Sandro Total** | | |  |  |  | **0.05** |  | **0.30** | |  | **0.35** |
| GR | Nakarmi,  Prabandha | Detector Calibration | Domcal run vetting | NSF Base Grant |  |  |  |  |  | | 0.20 | 0.20 |
| Ice Properties | Low brightness flasher run analysis | NSF Base Grant |  |  |  |  |  | | 0.25 | 0.25 |
|  | **Nakarmi, Prabandha Total** | |  |  |  |  |  |  |  | | **0.45** | **0.45** |
| **UA Total** | | |  |  | **0.35** | **0.20** | **0.05** |  | | **0.40** | **0.65** | **1.65** |

**Faculty:**

Dawn Williams – Institutional Lead, Analysis Coordinator

Marcos Santander – Multimessenger searches for neutrino sources

**Postdoc:**

Sandro Kopper – tau neutrino analysis, BSM double pulse analysis

**Ph.D. Students:**

Prabandha Nakarmi – vetting monthly domcal runs

Analysis of low energy flasher data

Thesis /Analysis topics: TBD (still taking classes)

**UA General M&O (non-science) IceCube Responsibilities and Contributions:**

The Alabama Group’s major responsibilities and contributions towards maintenance and operations of the IceCube experiment include:

* Primary institutional responsibility for analysis coordination
* Major responsibility for the following calibration group activities: flasher data collection and flasher analysis support, baseline and charge calibration
* Major responsibility for tau neutrino analysis

**Analysis:** The main analysis focus at the University of Alabama is searching for tau neutrinos and multimessenger searches for neutrino sources.

**Computing Resources**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **2016** | | **2017** | |
|  | **CPU Cores** | **GPU Cards** | **CPU Cores** | **GPU Cards** |
| **IceCube** |  | 6 (Tesla K20m) |  | 6 (Tesla K20m) |
| **PINGU** |  |  |  |  |
| **Gen2** |  |  |  |  |

**Now that a postdoc is resident at UA, we are working with Gonzalo Merino and UA OIT to try and connect these machines to the cluster. In the meanwhile, these GPUs are being used locally for flasher data ice model fitting and targeted muon simulation.**