# IceCube Institutional Memorandum Of Understanding (MOU)

**Scope of Work**

**University of Alabama**

**Dawn Williams**

**Ph.D Scientists** (Faculty Scientist/Post Doc Grads): **2** (2 0 3)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 | 2.1.1. Administration | Alabama Institutional Lead | | | Inst. In-Kind | 0.05 |  | |  | |  | |  |  | 0.05 |
|  |  | 2.1.4 Education and Outreach | IceCube Outreach | | | Inst. In-Kind | 0.05 |  | |  | |  | |  |  | 0.05 |
|  |  | 2.4.3 Public Data Products | Convenor of Data release task force | | | M&O Core |  |  | |  | | 0.05 | |  |  | 0.05 |
|  |  | 2.6.2 Ice Properties | Supporting flasher runs and flasher analysis | | | Inst. In-Kind |  |  | |  | |  | |  | 0.10 | 0.10 |
|  |  | 2.6.1 Detector Calibration | Baseline and charge harvesting and DOMCal | | | M&O Core |  |  | |  | |  | |  | 0.10 | 0.10 |
|  | **Williams, Dawn Total** | |  | | |  | **0.1** |  | |  | | **0.05** | |  | **0.20** | **0.35** |
|  | Santander, Marcos | 2.1.4 Education and Outreach | IceCube Outreach | | | Inst. In-Kind | .05 |  | |  | |  | |  |  | 0.05 |
|  | 2.1.1 Administration | Realtime Oversight Committee member | | | Inst. In-Kind | 0.1 |  | |  | |  | |  |  | 0.1 |
|  | 2.1.1 Administration | Publications Committee member | | | Inst. In-Kind | 0.1 |  | |  | |  | |  |  | 0.1 |
|  | 2.5.4 Science Support Tools | Public alerts summary web page | | | Inst. In-Kind |  |  | |  | |  | | 0.05 |  | 0.05 |
|  | 2.2.4 Detector Monitoring | Online Moon shadow analysis (monitoring) | | | Inst. In-Kind |  | 0.1 | |  | |  | |  |  | 0.1 |
|  | 2.5.3 Reconstruction | Reconstruction validation - PSF studies | | | Inst. In-Kind |  |  | |  | |  | | 0.05 |  | 0.05 |
| **Santander, Marcos Total** | |  | | |  | **0.25** | **0.1** | |  | |  | | **0.10** |  | **0.45** |
| GR | **Goswami, Sreetama** | 2.2.4 Detector Monitoring | Online Moon shadow analysis (monitoring) | | | Inst. In-Kind |  |  | |  | |  | |  | 0.1 | 0.1 |  | |  | |  | | 0.1 | |
|  |  | 2.2.4 Detector Monitoring | Monitoring shifts | | | Inst. In-Kind |  | 0.05 | |  | |  | |  |  |  |  | |  | |  | |  | |
|  | **Goswami, Sreetama Total** | | | | | |  | | **0.05** | |  | |  |  | **0.1** | **0.15** |  |  | |  | |  | |
| GR | Ghadimi, Ava | 2.2.4 Detector Monitoring | Monitoring shifts | | Inst. In-Kind | |  | 0.05 | |  | |  | |  |  | 0.05 |  |  | |  | |  | |
|  | **Ghadimi, Ava Total** | | | | | |  | **0.05** | |  | |  | |  |  | **0.05** |  |  | |  | |  | |
| GR | Brnich, Rebecca | 2.2.4 Detector Monitoring | | Monitoring shifts | | Inst. In-Kind |  | 0.05 | |  | |  | |  |  | 0.05 |  |  | |  | |  | |
| **Brnich, Rebecca Total** | | | | | |  | **0.05** | |  | |  | |  |  | **0.05** |  |  | |  | |  | |
| **UA Total** | | |  | |  | | **0.35** | **0.25** | | **0.00** | | **0.05** | | **0.10** | **0.30** | **1.05** |

**Faculty:**

Dawn Williams – Institutional Lead, Calibration, Tau Neutrino Analysis

Marcos Santander – Multimessenger searches for neutrino sources

**Ph.D. Students:**

Sreetama Goswami – Monitoring with Moon shadow analysis (starting work, still taking classes now). Monitoring shifts. Correlation studies with hard X-rays.

Ava Ghadimi: Correlation studies with GeV gamma rays. Monitoring shifts.

Rebecca Brnich: Tau neutrino search. Monitoring shifts.

**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:

* Major responsibility for the following calibration group activities: flasher data collection and flasher analysis support, baseline and charge calibration

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

**Computing Resources**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **2019** | | **2020** | |
|  | **CPU Cores** | **GPU Cards** | **CPU Cores** | **GPU Cards** |
| **Pledged resources in the IceCube common cluster** |  | 6 (Tesla K20m) |  | 6 (Tesla K20m) |

**These GPUs are being used locally for flasher data ice model fitting and targeted muon simulation.**

**Upgrade**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Labor Cat.** | **Names** | **WBS L3** | **Tasks** | **Funds Source** | WBS 1.1 | WBS 1.2 | WBS 1.3 | WBS 1.4 | WBS 1.5 | WBS 1.6 | **Grand Total** |
| Project Office | Gen2 EHWD | Deep Ice Sensor Modules | Comms Power Timing | Calibration and Characterization | M&O Data Systems Integration |
| KE | Williams, Dawn | 1.5.2 Calibration Assemblies | LED Flasher Design and Testing | Inst. In-Kind |  |  |  |  | 0.05 |  | 0.05 |
|  |  | 1.5.4 Calibration Management | L2 Management of Calibration and Characterization | Upgrade Core |  |  |  |  | 0.25 |  | 0.25 |
|  | **Williams, Dawn Total** | |  |  |  |  |  |  | **0.30** |  | **0.30** |
| **UA Total** | | |  |  |  |  |  |  | **0.30** |  | **0.30** |