**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** | **Grand Total** |
| Program Management | | Detector Maintenance & Operations | | Computing & Data Management | | Triggering & Filtering | | Data Quality, Reconstruction & Simulation Tools |
| KE | Williams, Dawn | Detector Calibration | Managing flasher runs and coordinating low level calibration effort | NSF M&O Core |  | | 0.20 | |  | |  | |  | 0.20 |
|  |  | TFT Coordination | TFT board member | Inst. In-Kind |  | |  | |  | | 0.10 | |  | 0.10 |
|  |  | Physics Filters | Tau WG lead | Inst. In-Kind |  | |  | |  | | 0.25 | |  | 0.25 |
|  | **Williams, Dawn Total** | |  |  |  | | **0.20** | |  | | **0.35** | |  | **0.55** |
|  | Toale, Patrick | Reconstruction/Analysis Tools | Tau reconstruction tools | Inst. In-Kind |  | |  | |  | |  | | 0.05 | 0.05 |
|  | **Toale, Patrick Total** | |  |  |  | |  | |  | |  | | **0.05** | **0.05** |
| PO | Palczewski, Tomasz | Detector Calibration | Domcal monthly vetting | NSF Base Grant |  | 0.05 | |  | |  | |  | | 0.05 |
|  |  | Detector Calibration | SPE recalibration | NSF Base Grant |  | 0.10 | |  | |  | |  | | 0.10 |
|  |  | Core Software Systems | Software strike team, lead on domcal-related software | NSF Base Grant |  |  | | 0.25 | |  | |  | | 0.25 |
|  | **Palczewski , Tomasz Total** | |  |  |  | **0.15** | | **0.25** | |  | |  | | **0.40** |
| GR | Pepper, James | Detector Calibration | I3Live C&V | NSF Base Grant |  | | 0.05 | |  | |  | |  | 0.05 |
|  |  | Detector Monitoring | Monitoring shifts | NSF Base Grant |  | 0.05 | |  | |  | |  | | 0.05 |
|  |  | Simulation Programs | Dark Matter signal simulation | NSF Base Grant |  | |  | |  | |  | | 0.15 | 0.15 |
|  | **Pepper, James Total** | |  |  |  | | **0.10** | |  | |  | | **0.15** | **0.25** |
| **UA Total** | | |  |  |  | **0.45** | | **0.25** | | **0.35** | | **0.20** | | **1.25** |

**Faculty:**

Dawn Williams – Institutional Lead, Calibration Co-Coordinator, TFT Board Member, Cascade-Tau Working Group Co-Coordinator

Patrick Toale – hybrid reconstruction tools

**Scientists and Post Docs:**

Tomasz Palczewski – SPE recalibration, monitoring shifts, domcal monthly vetting, software strike team with lead responsibility on domcal related software

Analysis topics: Tau detection through the tau to muon decay channel

**Ph.D. Students:**

James Pepper - verification monitoring, dark matter signal simulation

Thesis /Analysis topics: Heavy Gravitino Dark Matter Decay

**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 overseeing flasher operations and software.
* Major responsibility for calibration coordination, including ice model working group activities and domcal monthly vetting, and data-based calibration of baselines and charge
* Major responsibility for tau neutrino analysis, cascade-tau working group co-lead

**Analysis:** The main analysis focus at the University of Alabama is searching for tau neutrinos.

Alabama is also working on analysis of cascade events from gravitino dark matter; including both simulation and reconstruction tools for such events.