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

**Scope of Work**

**University of Texas at Arlington**

**Ben Jones**

**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 | Ben Jones | 2.5.2 Simulation Software | GolemFit and nuSQuiDS contributions |  |  |  |  | 0.05 |  | 0.05 |
|  | 2.6.2 Ice Properties | Ice model uncertainty estimation using multisim MC method |  |  |  |  |  | 0.10 | 0.10 |
|  | 2.1.4 Education & Outreach | UTA astroparticle physics summer school for high school students | 0.05 |  |  |  |  |  | 0.05 |
|  | **Ben Jones Total** | |  | **0.05** |  |  |  | **0.05** | **0.10** | **0.20** |
| GR | Grant Parker | 2.5.2 Simulation Software | Development, testing and maintenance of GolemFit code |  |  |  |  | 0.1 |  | 0.05 |
|  | 2.6.2 Ice Properties | Negative modes in SnowStorm systematics framework |  |  |  |  | 0.25 | 0.25 | 0.50 |
|  | **Grant Parker total** | | |  |  |  |  | **0.35** | **0.25** | **0.6** |
|  | Benjamin Smithers | 2.5.2 Simulation Software | SnowSuite systematics framework for IceCube analyses, including implementation in official production |  |  |  |  | 0.5 |  |  |
|  | 2.6.2 Ice Properties | SnowStorm extension to systematics including hole ice, anisotropy, etc. |  |  |  |  | 0.25 | 0.25 |  |
|  | **Benjamin Smithers Total** | |  |  |  |  |  | **0.75** | **0.25** | **1.00** |
| **UTA Total** | | |  | **0.05** |  |  |  | **1.15** | **0.6** | **1.8** |

**Faculty:**

Ben Jones. Group leader.

**Scientists and Post Docs:**

None

**Grad Students:**

Grant Parker (works on BSM oscillations and ice uncertainties); Ben Smithers (works on tool development for astro nu global fit)

**Description of planned analysis:**

UTA is contributing the systematic uncertainty framework to underly future IceCube analyses, with a short-term target of the global astrophysical fits coordinated by the diffuse group. We also work on non-standard oscillation phenomena within the oscillations group, including the searches for sterile neutrinos, non-standard interactions, and decoherence.

**Description of planned service work:**

As coordinated with Paolo Desiati, UTA will contribute to the problem of ascribing an uncertainty to the ice model using the multi-sim approach applied to flasher data. The first version of this method has been demonstrated with the MEOWS sterile neutrino analysis, and a more comprehensive version is being developed for full-collaboration rollout.

**Computing Resources**

UTA has assisted IceCube with use of the Titan supercomputer and supported use of PanDA distributed computnig software