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

**Scope of Work**

**University of Wisconsin – River Falls**

**Jim Madsen**

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

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Labor Cat.** | **Names** | **WBS L3** | **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 | MADSEN, JIM  | Administration | Speakers Comm. Chair | 0.25 |   |   |   |   | 0.25 |
|  | Education & Outreach | Teachers’ program and UWRF Upward Bound | 0.10 |   |   |   |   | 0.10 |
|   | Reconstruction/ Analysis tools | low-energy IceTop extensions |   |   |   |   | 0.10 | 0.10 |
|   | **MADSEN, JIM Total** |  | **0.35** |  |  |  | **0.10** | **0.45** |
|   | SPICZAK, GLENN | IceTop Operations | IceTop tank Monitoring |   | 0.03 |   |   |   | 0.03 |
|   | **SPICZAK, GLENN Total** |  |  | **0.03** |  |  |  | **0.03** |
| Seunarine, Suruj | Physics Filters | Calibration-Flasher Studies |  |  |   | 0.20 |   | 0.20 |
|  | Reconstruction/ Analysis tools | Low-Energy Extensions of IceTop |  |  |  |  | 0.10 | 0.10 |
|   | **Seunarine, Suruj Total** |  |  |  |  | **0.20** | **0.10** | **0.30** |
| TE | UWRF TE | Education & Outreach | Teachers Program | 0.10 |   |   |   |   | 0.10 |
|   | **UWRF TE Total** |  | **0.10** |  |  |  |  | **0.10** |
| **UWRF Total** |  |  | **0.45** | **0.03** |  | **0.20** | **0.20** | **0.88** |

**Faculty:**

Jim Madsen (L,) - ICB, Institution lead, Speakers Committee Chair, Education and Outreach including Teachers’ program and UWRF Upward Bound, Undergraduate research, Low-Energy Extensions of IceTop

Glenn Spiczak – IceTop tank monitoring, Education and Outreach including Astrophysics course development, Undergraduate research

Suruj Seunarine – Undergraduate Research, Calibration-Flasher Studies, Low-Energy Extensions of IceTop, IceCube Live features advisory committee

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

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

* Education and Outreach activities including intensive research experiences for undergraduates, math and science enrichment for underrepresented groups in the UWRF Upward Bound Program, and graduate level classes for in-service high school teachers featuring IceCube science
* Calibration of IceTop tanks with muon tagger and extensions to low energy with Oden cruise data
* Calibration-Flasher Studies