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

**Scope of Work**

**Harvard University**

**Carlos A. Argüelles**

**Ph.D Scientists** (Faculty Scientist/Post Doc Grads): **1** (1 0 1)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 | Carlos A. Argüelles | 2.1.1 Administration | Beyond Standard Model working group technical leader and ICB member | 0.20 |   |   |   |   |  | 0.20 |
|  | 2.1.4 Education & Outreach | Outreach activities in the Boston area |  0.05 |  |   |   |   |  | 0.10 |
|  | 2.5.4 Science Support Tools | GolemFit framework development coordination |  |   |   |   |  0.10 |  | 0.10 |
|   | **Carlos A. Argüelles Total** |  | **0.25** |  |  |  | **0.10** |  | **0.35** |
| PO | Name of Postdoc 1 | 2.5.4 Science Support Tools | GolemFit framework development |   |  |   |   |  |  |  |
|   |   | 2.3.3 Distributed Computing Resources | CPU and GPU cluster maintenance |   |   |  |   |  |  |  |
|   | **Name of Postdoc 1 Total** |  |  |  |  |  |  |  |  |
| GR   | Barbara Skrzypek | 2.5.4 Science Support Tools | Maintenance and development of LeptonInjector |   |  |   |  | 0.10 |  | 0.10 |
|   | 2.5.4 Science Support Tools | GolemFit framework development |  |   |   |   |  0.10 |  | 0.10 |
| **Barbara Skrzypek Total** |  |  |  |  |  | **0.20** |  | **0.20** |
| Name of graduate student 2 | 2.5.4 Science Support Tools | Maintenance and development of LeptonWeighter |   |  |   |   |  |  |  |
|   | **Name of Grad Student 2 Total** |  |  |  |  |  |  |  |  |
| **Harvard Total** |  | **0.25** | **0.00** | **0.00** | **0.00** | **0.30** | **0.00** | **0.55** |

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| **IceCube Upgrade** |
| **Labor Cat.** | **Names** | **WBS Level 3** | **Tasks** | **WBS 1.1** | **WBS 1.2** | **WBS 1.3** | **WBS 1.4** | **WBS 1.5** | **WBS 1.6** | **Grand Total** |
| Project Office  | Drilling | Sensors | Comms, Power, Timing | Calibration | Data Systems |
| KE | Carlos A. Argüelles | Project Management | Coordinate with FermiLab time for Beam-test | 0.05 |   |   |   |   |  | 0.05 |
|   | **Carlos A. Argüelles Total** |  | **0.05** |  |  |  |  |  | **0.05** |
| PO | Name of Postdoc 1 | Calibration Assembles | FermiLab Beam-test development |   |  |   |   |  |  |  |
|   |   | Special Devices | “Brussels sprouts” electronics |   |   |  |   |  |  |  |
|   | **Name of Postdoc11 Total** |  |  |  |  |  |  |  |  |
| GR | Barbara Skrzypek | Calibration Assembles | FermiLab Beam-test development |   |  |  |  | 0.10 |  | 0.10 |
|    |   | Simulation Software | Development of LeptonInjector for the IceCube-Upgrade |   |   |  |  |  | 0.10 | 0.10 |
| **Name of Postdoc12 Total** |  |  |  |  |  | **0.10** | **0.10** | **0.20** |
| Name of Grad Student 2 | Special Devices | “Brussels sprouts” electronics |   |  |  |   |   |  |  |
|   | **Name of Grad Student 2 Total** |  |  |  |  |  |  |  |  |
| **Harvard Total** |  | **0.05** | **0.00** | **0.00** | **0.00** | **0.10** | **0.10** | **0.25** |

**Faculty**:

Carlos A. Argüelles – Institution lead, member of the ICB, beyond-standard model technical leader, organize outreach activities in the Boston area. Coordination of GolemFit framework development.

**Scientists and Post Docs:**

Name to be determined – Development of the IceCube-Upgrade beamtest, coordination of the Brusselsprouds electronics, maintaining Harvard cluster, and GolemFit framework development.

Analysis topics: Working on the extension of the multiyear high-energy sterile analysis, MEOWS+.

**Grad Students:**

Barbara Skrzypek (3rd year) – M&O responsibilities is the maintenance and development of LeptonInjector for IceCube and the Upgrade. She will also help in the IceCube-Upgrade beam-test.

Analysis topics: Working on the extension of the multiyear high-energy sterile analysis, MEOWS+.