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

**Scope Of Work**

**Université Libre de Bruxelles**

**Juan Antonio Aguilar Sánchez**

**Ph.D Scientists** (Faculty Scientist/Post Doc Grads): **5** (3 2 2)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Labor Cat.** | **Names** | **WBS L3** | **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 | Aguilar Sánchez, Juan Antohio | Administration | Beyond Standard Model WG co-Chair | 0.25 |  |   |  |   |  | 0.25 |
|  | Administration | Institutional Lead | 0.20 |   |   |   |  |  | 0.20 |
|  | Administration | Member of PubCom | 0.20 |  |  |  |  |  | 0.20 |
| Maris, Ioana (0.5FTE) | To be decided |  |  |  |  |  |  |  |  |
| Toscano, Simona | Administration | Member of PubCom | 0.20 |  |  |  |  |  | 0.20 |
| **Faculty Total** |  | **0.85** |  |  |  |  |  |  **0.85** |
| PO | Baur, Sebastian | Online Filter (Pnf) | Upgrade Simulations |  |  |  | 0.20 |  |  |  |
| Mockler, Daniela | To be decided  | IceTop Upgrade |  |  |  |  |  |  |  |
|  | **PO Total** |  |  |  |  | **0.20** |  |  |  |
| GR | ULB GR | Detector Monitoring | Monitoring Shifters |  | 0.12 |  |  |  |  | 0.12 |
|  | Renzi, Giovanni | Online Filter (Pnf) | Vertical event filter, WIMP L2 |  | 0.20 |  |  |  |  | 0.20 |
|  | Iovine, Nadège | Detector Monitoring | IceTop Snow Monitor |  | 0.20 |  |  |  |  | 0.20 |
|  | **ULB GR Total** |  |  | **0.52** |  |  |  |  | **0.52** |
| **ULB Total** |  |  | **0.85** | **0.52** |  |  |  |  | **2.37** |

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| **Labor Cat.** | **Names** | **WBS L3** | **Tasks** | WBS 1.1 | WBS 1.2 | WBS 1.3 | WBS 1.4 | WBS 1.5 | WBS 1.6 | **Grand Total** |
| Porject Office | Gen2 Enhanced Water drill | Deep Ice Sensor Modules | CMT | Characterization & Calibration | M&O Data Systems |
| PO | Baur, Sebastian | Online Filter (Pnf) | Upgrade Simulations |  |  |  | 0.20 |  |  |  |
| Mockler, Daniela | To be decided  | IceTop Upgrade |  |  |  |  |  |  |  |
|  | **PO Total** |  |  |  |  | **0.20** |  |  |  |
|  | **ULB GR Total** |  |  | **0.52** |  |  |  |  | **0.52** |
| **ULB Total** |  |  | **0.65** | **0.52** |  |  |  |  | **2.37** |

**Faculty:**

Juan Antonio Aguilar – Local PI

Ioana Maris – 0.5 FTE Cosmic Ray analysis and R&D for Surface Veto

Simona Toscano – Started on 1st October 2018. Radio activities (ARA, Radar…)

**Scientists/post-docs:**

Sebastian Baur – Dark Matter searches with IceCube Upgrade. Event selection studies for the IceCube Upgrade

Daniela Morcker – IceTop Upgrade.

**Graduate Students**

Isabelle Ansseau – Chaged topic of PhD. Now doing SiPM characterization.

 Thesis/Analysis topics: Characterization of SiPM and application to astroparticle and proton therapy

Nadège Iovine – IceTop Snow Monitor

 Thesis/Analysis topics: Dark matter from the Galactic Center (combined analysis with ANTARES)

Giovani Renzi – Vertical event filter and WIMPreader

 Thesis/Analysis topics: Analysis on earth wimps dark matter

**Computing Resources**

**IIHE (ULB-VUB)**

|  |  |  |
| --- | --- | --- |
|  | **2017** | **2018** |
|  | **CPU Cores**  | **GPU Cards** | **CPU Cores** | **GPU Cards** |
| Pledged resources in the IceCube common cluster | Up to 1000 | 14 | Up to 1000 | 14 |

The computing resources in the table are provided by the IIHE (ULB-VUB), i.e. by ULB and VUB together.

The 14 GPU cards used for the production of MC samples for the collaboration. The jobs are launched centrally. From our side we cannot see whether the jobs run for IceCube or Gen2.

The CPU cores are used for the production of MC samples by the collaboration. In the course of 2018 up to a max of 1000 cores may be made available.

The person to contact for technical information is Olivier: Olivier.devroede@vub.be