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

**Scope Of Work**

**Universite Libre de Bruxelles**

**Juan Antonio Aguilar Sanchez**

**Ph.D Scientists** (Faculty Scientist/Post Doc Grads): **3** (1 2 3)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 | AGUILAR SANCHEZ, JUAN ANTONIO | Physics Filters | Muon working group co-Chair |  |  |   | 0.25 |   | 0.25 |
|  | Administration | Institutional Lead |  |   |   |   | 0.20  | 0.20 |
|  | Simulation Production | Simulation coordination board member |  |  | 0.10 |  |  | 0.10 |
|  |  | Reconstruction/ Analysis tools | Flares, point-sources |  |  |  |  | 0.05 | 0.05 |
|  | **AGUILAR, JUANAN Total** |  |  |  | **0.10** | **0.25** | **0.25** | **0.60** |
| PO | O’Murchadha, Aongus | Engineering and R&D Support | EMI Measurements | 0.10 |  |  |  |  | 0.10 |
|  | Meagher, Kevin | Core Software  | Software strike team  |  |  | 0.25 |  |  | 0.25 |
|  | **PO Total** |  | **0.10** |  | **0.25** |  |  | **0.35** |
| CS | Amary, Samir | Simulation Production | Simulation Production Site Manager at ULB |   |   | 0.10 |   |   | 0.10 |
|  | **PO Total** |  |  |  | **0.10** |  |  | **0.10** |
| GR | ULB GR | Monitoring | Monitoring Shifters |  | 0.12 |  |  |  | 0.12 |
|  | Raab, Christoph | Reconstruction / Analysis Tools  | Muon reconstructions for IceCube-Gen2 |  |  |  |  | 0.25 | 0.25 |
|  | Pinat, Elisa | Data Acquisition  | DAQ  |  | 0.50 |  |  |  | 0.50 |
|  | Ansseau, Isabelle  | Physics Filters | Vertical event filterIceSim 3 vs 4 comparisons |  |  |  | 0.20 |  | 0.20 |
|  | **ULB GR Total** |  |  | **0.62** |  | **0.20** | **0.25** | **1.07** |
| **ULB Total** |  |  | **0.10** | **0.62** | **0.45** | **0.45** | **0.50** | **2.12** |

**Faculty:**

Juan Antonio Aguilar – Muon WG co-lead. Data and simulation comparison at analysis level, GRB database, Simulation coordination board member

**Scientists/post-docs:**

Aongus O’Murchadha – ARA/IceCube leaving in July 2016

 Analysis topics: ARA data analysis

Kevin Meagher – Service: Software strike team + IceCube-Gen2 reconstructions.

 Analysis topics: Online transient analyses.

**Graduate Students**

Elisa Pinat - Next-Gen IceCube / PINGU Communication Systems Development

 Thesis/Analysis topics: Search for neutrino emission from extended regions

Isabelle Ansseau – Vertical event filter, IceSim 3 vs 4 comparisons

 Thesis/Analysis topics: Analysis on earth wimps dark matter

Christoph Raab – Service: IceCube-Gent2 reconstructions.

 Thesis/Analysis topics: Time dependent search for Blazars

**Computer Scientists:**

Samir Amary – Computer Scientist

**Computing Resources**

**IIHE (ULB-VUB)**

|  |  |  |
| --- | --- | --- |
|  | **2016** | **2017** |
|  | **CPU Cores**  | **GPU Cards** | **CPU Cores** | **GPU Cards** |
| **IceCube**  |  | 14 | Up to 500 | 14 |
| **PINGU** |  |  |  |  |
| **Gen2**  |  |  |  |  |

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

The 14 GPU cards are presently 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, PINGU or Gen2.

We intend to also open access to CPU cores for the production of MC samples by the collaboration. This is now under development. Probably by next year a max of 500 cores could be made available. The number will increase gradually during 2016.

The person to contact for technical information is Samir, samir.amary@ulb.ac.be