**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): **2** (1 1 3)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 SANCHEZ, JUAN ANTONIO | Online Filter (Pnf) | Muon WG co-Chair |  | 0.25 |   |  |   |  | 0.25 |
|  | Administration | Institutional Lead | 0.20 |   |   |   |  |  | 0.20 |
|  | Simulation Production | Member of ICC | 0.10 |  |  |  |  |  | 0.10 |
|  |  | ~~Reconstruction~~ | ~~Flares, point-sources~~ |  |  |  |  | ~~0.05~~ |  | ~~0.05~~ |
|  | **AGUILAR, JUANAN Total** |  | **0.30** | **0.25** |  |  | **~~0.05~~** |  | **0.55** |
| PO | Meagher, Kevin | Core Software  | Software strike team  |  |  |  |  | 0.25 |  | 0.25 |
|  | **PO Total** |  |  |  |  |  | **0.25** |  | **0.25** |
| CS | ~~Amary, Samir~~ | ~~Central Computing Resources~~ | ~~Local IT support~~ |  |  |  | ~~0.10~~ |  |  | ~~0.10~~ |
|  | **PO Total** |  |  |  |  | **~~0.10~~** |  |  | **~~0.10~~** |
| GR | ULB GR | Detector Monitoring | Monitoring Shifters |  | 0.12 |  |  |  |  | 0.12 |
|  | Raab, Christoph | Core Software  | Software strike team |  |  |  |  | 0.25 |  | 0.25 |
|  |  | Offline data production | Pass2 verification |  |  |  | 0.05 |  |  | 0.05 |
|  | ~~Pinat, Elisa~~ | ~~Data Acquisition~~  | ~~DAQ~~  |  | ~~0.50~~ |  |  |  |  | ~~0.50~~ |
|  | Ansseau, Isabelle  | Online Filter (Pnf) | Vertical event filter, WIMP L2 |  | 0.20 |  |  |  |  | 0.20 |
|  | **ULB GR Total** |  |  | **0.32** |  | **0.05** | **0.25** |  | **0.62** |
| **ULB Total** |  |  | **0.30** | **0.57** |  | **0.05** | **0.50** |  | **1.42** |

**Faculty:**

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

**Scientists/post-docs:**

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