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

**Scope of Work**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 | Van Eijndhoven Nick | Reconstruction  | IcePack analysis software tools |   |   |   |   |  0.25 |  | 0.25 |
| Administration | Institutional co-lead | 0.10 |  |  |  |  |  | 0.10 |
| Engineering and R&D Support | self-veto techniques for Icecube-Gen2 | 0.15 |   |   |   |  |  | 0.15 |
| Engineering and R&D Support | Radio/radar detection for IceCube-Gen2 | 0.15 |   |   |   |  |  | 0.15 |
| **Van Eijndhoven Nick total** |  | **0.40** |  |  |  | **0.25** |  | **0.65** |
| De Clercq Catherine | Administration | Institutional Lead | 0.20 |   |   |   |   |  | 0.20 |
| **De Clercq Catherine total** |  | **0.20** |  |  |  |  |  | **0.20** |
| De Vries, Krijn | Engineering and R&D Support | Radio/radar detection for IceCube-Gen2 | 0.25 |   |   |   |  |  | 0.25 |
| Education and Outreach | Education and Outreach | 0.10 |  |  |  |  |  | 0.10 |
|  | **De Vries, Krijn Total** |  | **0.35** |  |  |  |  |  | **0.35** |  |
|     PO |  |  |  |  |   |   |   |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | VUB PO | Detector Monitoring | Detector Monitoring |   | 0 |   |   |   |  | 0 |
|   | **VUB PO Total** |  |  | **0** |  |  |  |  | **0** |
| GR | Correa, Pablo | Education and Outreach | Education and Outreach | 0.10 |  |  |  |  |  | 0.10 |
|  |  |
|  |  |
|  | **Correa, Pablo Total**  |  | **0.10** |  |  |  |  |  | **0.10** |
|  | Coppin, Paul | Reconstruction | Maintenance of GRBWEB |  |  |  |  | 0.10 |  | 0.10 |
|   | **Coppin, Paul Total** |  |  |  |  |  | **0.10** |  | **0.10** |
|   | VUB GR | Detector Monitoring | Detector Monitoring |   | 0.06 |   |   |   |  | 0.06 |
|   | **VUB GR Total** |  | **0.10** | **0.06** |  |  | **0.10** |  | **0.26** |
| **VUB Total**  |  | **1.05** | **0.06** |  |  | **0.35** |  | **1.46** |

**Vrije Universiteit Brussel**

**Catherine de Clercq**

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

**Note: Gen-2 contributions not relevant to IceCube M&O are highlighted in blue** (Total: 0.55 FTE)

**Faculty:**

Catherine de Clercq Institutional Lead

Nick Van Eijndhoven Institutional co-lead

 IceCube analysis software tools (IcePack framework),

GEN2 geometry optimization

R&D on radio/radar detection

GRB/AGN analysis

Krijn De Vries R&D on radio/radar detection

 Education & outreach

 GRB/AGN analysis

**Ph.D. Students:**

 Paul Coppin Maintenance of GRBWEB

 Analysis topic: GRB analysis

 Thesis topic: Precursor and afterglow analysis of GRBs

 Pablo Correa Education and Outreach

 Analysis topic: AGN analysis

 Thesis topic: Dust obscured and ultra-luminous infrared galaxies

 Simon De Kockere service task to be defined

 Analysis topic: in-ice radio detection of neutrino interactions

**Diploma/Master Students:**

**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