

**Memorandum of Agreement
between the Virgo collaboration
and the LAPP group
for the participation to Virgo**

April, 2015

The purpose of this agreement is to describe the participation of the LAPP group to the Virgo collaboration. The period covered by this Memorandum is two years from the approval date of the VSC.

1. CNRS and INFN signed an agreement concerning the realization of an antenna, VIRGO, for the detection of gravitational waves on 27 June 1994 in Pisa. VIRGO consists of a three kilometer Fabry-Perot interferometric antenna aimed at the detection of gravitational waves in the frequency range 10-10000 Hz. The construction, exploitation and data analysis of the VIRGO antenna is under the responsibility of the Virgo collaboration, which has been defined in its present form in December 2001. The VIRGO collaboration is represented by its Spokesperson. The operation of the VIRGO antenna is supervised by the EGO Council.
2. The past involvements of the LAPP group are described in the previous MoA (see VIR-037A-07).
3. The current LAPP group responsibilities in the Advanced Virgo project are the following:
 - MIR sub-system: Mechanics and assembling of the robot for corrective coating (completed task).
 - DET sub-system
 - General design; Romain Gouaty is the current DET sub-system manager
 - Optical benches layout
 - Suspended detection benches
 - Local controls for suspended benches
 - In vacuum cabling for suspended benches
 - External benches
 - Optical, mechanical and electronic components for benches
 - Output mode cleaner
 - Photodiodes air boxes and supports
 - Photodiodes and associated electronics (readout and demodulation) and software
 - Galvanometers
 - Detection system slow control software
 - DAQ sub-system
 - General design; Loïc Rolland is the current DAQ sub-system manager
 - Timing system
 - Real time PCs
 - TOLM-PCIe boards
 - Mux-Demux box
 - DAQ-box
 - DAQ-box DAC mezzanine
 - DAQ-box ADC mezzanine
 - Optical fibers
 - Data collection
 - Digital cameras

- DAQ-box camera mezzanine
- Software: software for front-end electronics, data collection, beam imaging, automation, data display, Virgo process monitoring, fast control loop software, frame libraries, basic libraries for DAQ, detector monitoring system, data quality segment production, web monitoring
- Calibration
- SBE sub-system
 - Minitowers design, production and installation
 - Clean air diffuser and structures for SWEB and SNEB
 - SPRB external bench support
 - Tools for benches introduction

4. The current LAPP group contributions to Virgo working groups are the following:

- Benoît Mours is the current IPRB chair
- Damir Buskulic is the current CW group review co-chair
- Loïc Rolland is a member of the blind injection committee
- Loïc Rolland is responsible for data reconstruction
- Frédérique Marion is a co-chair of the detection committee
- Participation to commissioning activities, including noise budget (all people involved in construction)
- Participation to CBC activities (T. Adams, D. Buskulic, V. Germain, F. Marion, B. Mours)
- Participation to DetChar activities (V. Germain, F. Marion, D. Verkindt)
- Participation to CW activities (D. Buskulic, M.Yvert)

5. The current LAPP group composition is:

Name	FTE	Author	Student	Main activities and FTE
Thomas Adams	100%	yes		DA (CBC 90%, Burst 10%)
Romain Bonnand	100%	yes		AdV (DET 100%)
Damir Buskulic	100% (U)	yes		DA (CBC 50%, CW 50%)
Marine Ducrot	100%	yes	yes	AdV (DET 100%)
Vincent Germain	100%	yes	yes	AdV (DAQ 35%) DA (DETCAR 35%, CBC 30%)
Romain Gouaty	100%	yes		AdV (DET 100%)
Frédérique Marion	100%	yes		AdV (DAQ 10%, DET 10%, SBE 10%), DA (CBC 40%, DETCHAR 5%), MAN (25%)
Benoît Mours	100%	yes		AdV (DAQ 25%, DET 25%, SBE 30%, MAN 10%), DA (CBC 10%)
Loïc Rolland	100%	yes		AdV (DAQ 60%, DET 40%)
Didier Verkindt	100%	yes		AdV (DAQ 30%) DA (DETCAR 70%)
Michal Was	100%	yes		AdV (DET 90%) DA (Burst 10%)
Michel Yvert	40%	yes		DA (CW 40%)
Nicolas Allemandou	90%	no		Mechanics, AdV (DET 70%, SBE 20%)
Bruno Lieunard	45%	no		Mechanics, AdV (SBE 45%)
Laurent Giacobone	80%	no		Mechanics, AdV (DET 40%, SBE 35%, DAQ 5%)
Michel Cailles	40%	no		Mechanics, AdV (DET 30%, SBE 10%)
Laurent Journet	60%	no		Mechanics, AdV (DET 40%, SBE 20%)
Nicolas Letendre	80%	yes		Electronics, AdV (DAQ 60%, DET 20%)
Richard Hermel	25%	no		Electronics, AdV (DET 25%)
Sylvain Petit	90%	no		Electronics, AdV (DAQ 50%, DET 40%)
Alexandre Dalmaz	100%	no		Electronics, AdV (DAQ 70%, DET 30%)
Alain Masserot	80%	yes		Software, AdV (DAQ 60%, DET 20%)
Emmanuel Pacaud	100%	no		Software, AdV (DAQ 70%, DET 30%)
Thierry Bouedo	50%	no		Software, AdV (DAQ 50%)

Remarks:

- In the activity section, specify the leading activity in each of the five main

categories: Virgo operations (V), Virgo+ (V+), Advanced Virgo (AdV), Data Analysis (DA), long term activities (R&D). Indicate the FTE for each category. In case of an activity that cover several topics (like group leader), put it under Virgo operation

- For a person who just joined the collaboration, the date in the author column is the date when the person will be added in the author list. This date is one year after the joining of the collaboration (except for student where there is no delay)
- The label (U) means: teaching duties. In that case, the FTE is computed on the research time.

The LAPP group leader will inform the collaboration of any change in the group composition and of any new thesis proposed.

Approved:



Virgo collaboration Spokesperson

LAPP group Leader

01/04/2015

Date

01/04/2015

Date