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VIRGO

Memorandum of Understanding between VIRGO and the TAMA Project

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Memorandum of Understanding between VIRGO and the TAMA Project

The purpose of this Memorandum of Understanding (MOU) is to establish and define a collaborative relationship between VIRGO and the TAMA Project. VIRGO and TAMA detectors will use laser interferometry to measure the distortions of the space between free masses induced by passing gravitational waves. Both parties to this MOU share the joint goals of opening the field of gravitational wave astrophysics, through the direct detection of gravitational waves, and later through the use of such waves as astrophysical probes by coincidence analysis from all the detectors.

This MOU is intended to further these joint goals :

1. CNRS and INFN have signed an agreement concerning the realization of the Antenna for the detection of gravitational waves, VIRGO, on 27 June 1994 in Pisa. VIRGO consists of a three kilometers Fabry-Perot interferometric antenna aimed at the detection of gravitational waves in the frequency range 10-10000 Hz. VIRGO is to be built in Cascina, Italy. The validation phase of the central part of the antenna will start in 1999, while the full interferometer is expected to be operative during the year 2001. VIRGO presently involves 11 laboratories and about 200 physicists and technicians from INFN and CNRS. The realization of VIRGO is supervised by the VIRGO council foreseen in article 8 of the CNRS-INFN agreement.

2. Supported by a Grant-in-Aid for Creative Basic Research of the Ministry of Education, the TAMA project started in 1995. TAMA is a project to construct and operate a 300-m arm-length laser interferometer (TAMA300) to detect gravitational waves. There are two aims of this project : one is to establish techniques necessary for the future km-class laser interferometer; the other is to operate it to detect possible gravitational waves from nearby galaxies. The TAMA detector is being built at the campus of the National Astronomical Observatory (NAO) in Mitaka. In 1998 the interferometer will start operation, and hopefully, after one-year of improvements, it will achieve the desired sensitivity in 1999. The TAMA Project is a collaboration between people from National Astronomical Observatory (NAO), Institute for Cosmic Ray Research (ICRR), High Energy Accelerator Research Organization (KEK), University of Tokyo, University of Electro-Communications, Kyoto University and Miyagi University of Education.

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3. The Project Leader of VIRGO and the Principal Investigator of TAMA will serve as liaison between VIRGO and TAMA. In this capacity, they will identify issues that need to be considered by both VIRGO and TAMA, will facilitate study of these issues, will see that the results of these studies are communicated to both VIRGO and TAMA in a timely and effective manner and will help implement the goal of optimizing scientific opportunity.

4. Both parties need to develop large and specific efforts in many fields as diverse as : active and passive seismic isolation, optical metrology and manufacturing, vacuum technology, materials science (mechanical damping, dislocations, hysteresis), parallel computing, etc. Joint developments and sharing of technologies will improve the efficiency and quicken the achievement of the common goals.

5. VIRGO and TAMA will agree on observatory operating modes, schedules, joint data protocols, data analysis and data sharing.

6. VIRGO and TAMA will share hosting of scientific meetings and will invite each other to major meetings and reviews, agree to exchange documents and distribution lists, and agree to exchange team members in a helpful and collaborative manner.

7. Each party to this MOU continues to be responsible for obtaining all resources, and for all support of its staff including travel costs associated with the activities under this MOU. Exceptional support of travel by the other institution may be allowed for travel requested by that party.

8. In order to preserve the intellectual property rights of INFN, CNRS, and NAO, the VIRGO project leader and the TAMA principal investigator will at once inform the VIRGO council and NAO of any invention emanating from joint actions which might lead to intellectual property rights.

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9.This Memorandum of Understanding will remain in force until the parties mutually agree to terminate it. Attachments will define specific activities to be carried out.

Approved:

11/6/98

Yoshihide Kozai

Yoshihide Kozai
TAMA Principal Investigator

2/5/98

Alain Brillet
VIRGO project leader

Approved by the VIRGO Council on May, 6 1998