

Fermilab

NEWS



European Commission



H2020-MSCA-RISE-2016 — Grant Agreement N°
734303



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Gravitational waves detectors

Helios Vocca and Enrico Calloni

WP-3 Co-Leaders



WP3: Gravitational wave detectors (Research, Training, Transfer of Knowledge)

Lead: UNIPG

Participant: INFN, UNIPI, UNINA, UNIPG, Impex, EGO, CNRS, CALTECH, NAOJ

Objectives

O3.1: Test the frequency dependent squeezing on a full-scale prototype, before using this technique in the Advanced detectors.

O3.2: Develop a subtraction scheme for non stationary gravity gradient noise.

O3.3: Study of silicon and sapphire materials for third generation monolithic suspensions.

O3.4: Study of payload and seismic suspension systems for cryogenic facilities

O3.5: Implementation of advanced control techniques for second and third generation gravitational wave detectors

Motivations

- At the present time gravitational wave physics has started with two detectors in US (Advanced Ligo) and now the one in Europe (Advanced Virgo) is also joining.
- In the near future the Japanese KAGRA detector will start taking data.
- The aim of this WP is to optimize the improvements on R&D to improve the sensitivity of advanced gravitational wave detectors.
- The main noises particularly interesting from the point of view of scientific motivations are Seismic Noise, Newtonian Noise, Thermal Noise and the Quantum noise.

Secondments status

- 3 secondments from UNIPG to NAOJ have been already done
 - 2 H. Vocca (ER)
 - 1 A. Piluso (TS)

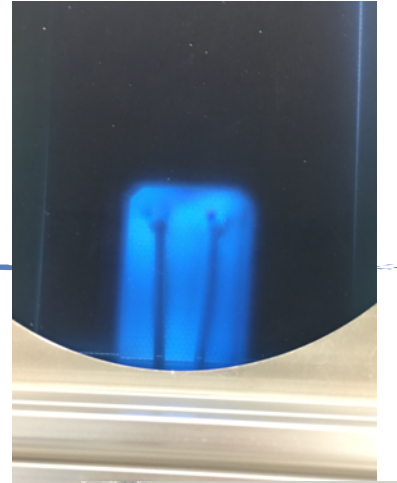
The secondments have been anticipated and for the TS changed from Caltech to NAOJ...

KTH	SE	EU/AC	yes	STANFORD	US	TC	yes	WP5	41	1
KTH	SE	EU/AC	yes	STANFORD	US	TC	yes	WP5	16	1
KTH	SE	EU/AC	yes	STANFORD	US	TC	yes	WP5	40	1
KTH	SE	EU/AC	yes	STANFORD	US	TC	yes	WP5	14	1

Secondment topic

The secondment aim has been to collaborate on the development of a sapphire cryogenic suspension for the KAGRA optics:

- Measuring the stress distribution on some mechanical components (the blade springs).
- Testing and organizing the HCB procedure for bonding the lateral sapphire "ears" to the experiment final optics.
- Designing the whole mechanics and procedure for the final optics installation.



Secondment topic

Networking activity:

Seminar activity at
the University of Toyama

教室セミナー

講演者 : Helios Vocca (University of Perugia)

題目 : The detection of Gravitational Waves and the Advanced Virgo status

日時 : 2017年7月20日 (木) 16 : 30~

場所 : 理学部多目的ホール

Abstract:

After the first gravitational wave detection on 14th September 2015 by the Ligo interferometers there is a growing interest in the whole field. The discovery of the signal emitted by binary black hole systems has been detected three times in slightly more than one year. Nowadays the Advanced Virgo detector is reaching a good sensitivity and we are facing the second science run with a Ligo and Virgo joint search that could open even more astrophysical implications, and in the next future the Kagra detector will be part of this game. In this talk I will describe the basic principles of gravitational waves up to their detections. A particular focus will be dedicated to the present status of the Advanced Virgo detector, and the foreseen evolutions that will be implemented before the next science run (O3) and beyond.

Secondment topic

Networking activity:

Presentation to the KAGRA F2F meeting

重力学 Gravitational Wave Group Accedi Cerca Titoli Testo

LCGT/ Meeting/ f2f/ 2017August

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17th KAGRA face-to-face meeting, August 28-30th 2017, Toyama University

Program

August 28th (Mon.)			
Time	Subject and Title	Speaker	File
10:30-11:00	Registration		
11:00-12:00	Lunch(dependeing on which lecture you attend)		
13:30-14:30	Invited talk (Chair: R. Kumar)		
	Status of Advanced Virgo (45 min+ 15 min)	Hellios Vocca, University of Perugia and Infn sez. di Perugia	
14:30-15:45	Subsystem III (Chair: A. Shoda)		
	DAS 1: Status of DAS (12 min)	Tagoshi	
	Introduction of new collaborators & guest (15 min)		

Networking output

The director of ICRR (The University of Tokyo) and PI of the KAGRA project, Prof. Takaaki Kajita (Nobel laureate) asked to join the NEWS project, adding ICRR as a hosting institution.

The KAGRA international collaboration is presenting a C2C program to the Japanese gov. and will insert NEWS as a counterpart budget program

