

# **The 5th Kagra International Workshop / The 1st Kagra-Virgo-3G Detectors Workshop**

**Thursday, February 14, 2019 - Saturday, February 16, 2019**

**Perugia - Italy**

## **Scientific Program**

## **5th KAGRA International Workshop - February 14-15, 2019**

### **•Opening and Introduction**

- \* Helios Vocca (University of Perugia and INFN): Opening
- \* Maurizio Busso (INFN Perugia Director): Welcome talk
- \* Massimiliano Rinaldo Barchi (Physics and Geology Dpt Director): Welcome talk

### **•Kagra present status**

*Chair: Masaki Ando*

- \* Keiko Kokeyama (ICRR): The Status of Kagra
- \* Kiwamu Izumi (ISAS/JAXA): Commissioning status of Kagra

### **•Ligo/Virgo status**

*Chair: Helios Vocca*

- \* Jo Van Den Brand (NIKHEF): The Status of Virgo
- \* Laura Cadonati (Georgia Tech.): The Status of Ligo
- \* Nicolas Arnaud (CNRS-LAL/EGO): LIGO-Virgo Detector Characterization (DetChar)

### **•Instrumentation**

*Chair: Takayuki Tomaru*

- \* Takafumi Ushiba (ICRR): CRY
- \* Tomohiro Yamada (ICRR): CRY HL-VIS
- \* Masashi Fukunaga (ICRR): Development and application of cryogenic displacement sensors towards the damping control of KAGRA cryogenic payloads
- \* Hiroyuki Tahara (U. Tokyo): Development of an auto-alignment system by machine learning
- \* Mark Barton (NAOJ) & Enzo Tapia (NAOJ): Status of Type B optic suspensions for KAGRA
- \* Enzo Tapia (NAOJ): VIS
- \* Yoshinori Fuji (NAOJ): VIS Type-A
- \* Ryohei Kozu (ICRR): Implementing the state space approach for controlling a suspension system in KAGRA
- \* Keiko Kokeyama (ICRR): Status and prospects of the KAGRA detector characterization
- \* Takaaki Yokozawa (ICRR): Status of KAGRA physical environmental monitors installation
- \* Takahiro Yamamoto (ICRR): The progress of the calibration and the reconstruction for joining the O3 observation
- \* Nakano Masayuki (ICRR): Status of the input optics for the o3

### **•Data analysis**

*Chair: Sadakazu Haino*

- \* Young-Min Kim (UNIST): Detector Characterisation
- \* Hideyuki Tagoshi (ICRR): KAGRA DA
- \* Magdalena Sieniawska (NCAC): Searching for continuous gravitational waves: data analysis strategies in LIGO/Virgo collaboration
- \* Hirotaka Yuzurihara (ICRR): Estimation of background distribution in gravitational wave search

### **•Computing**

*Chair: Zong Hong*

- \* Sangwook Bae (KISTI): KISTI cluster
- \* Zhoujian Cao (Beijing Normal University): Deep learning networks and gravitational wave signal recognition

### **•Science**

*Chair: Hisaaki Shinkai*

- \* Lijing Shao (Peking University): Tests of gravity with GWs
- \* Kyohei Kawaguchi (ICRR): NS related
- \* Xilong Fan (Hubei Univ.): The strong lensed GW-EM system as an astrophysical probe

#### •Multi-messenger

*Chair: Hyung Mok Lee*

- \* Mahito Sasada (HASC): Optical and NIR observations for gravitational-wave counterpart by J-GEM collaboration
- \* Hyung Mok Lee (KASI): EM Korean activities
- \* Z. Lucas Uhm (Goddard/KASI): Physics of relativistic jets from an NS merger
- \* Haoyu Wang (Beijing Normal University): Near-unstable cavities for future gravitational wave detectors

### 1st KAGRA Virgo & 3G Detectors Workshop - February 16, 2019

#### •Opening

*Chair: Laura Cadonati*

- \* Helios Vocca (University of Perugia and INFN): Welcome and motivations
- \* Enrico Traversa (Italian Embassy scientific attaché): EU/Italian-Japan collaboration
- \* Yuta Michimura OR Sadakazu Haino: 2.5+G and KAGRA: bridging between 2G and 3G
- \* Michele Punturo (INFN): 3G and Einstein Telescope: status
- \* Salvatore Vitale (MIT): 3G Science Case

#### •Infrastructures

*Chair: Michele Punturo*

- \* Miyoki Shinji: Infrastructures: the KAGRA experience
- \* Jan Harms: ET site qualification: Introduction to seismic and Newtonian noise qualification
- \* Peter Couvares: 3G computing and e-infrastructures
- \* Stefan Hild: ET Pathfinder

#### •R&D and new technologies

*Chair: Yuta Michimura*

- \* Fulvio Ricci: Report on the vacuum 3G workshop at LIGO
- \* Garrett Cole: Recent advancements in substrate-transferred crystalline coatings
- \* Stuart Reid: Fabrication of amorphous and crystalline mirror coatings for reaching the thermal noise requirements for 3G detectors
- \* Eleonora Capocasa: Status of the frequency dependent squeezing experiment at TAMA
- \* Mateusz Bawaj: Development of audio-band frequency-dependent vacuum squeezer for Advanced Virgo gravitational wave detector
- \* Ray-Kuang Lee: Preparation of vacuum noise squeezing injection for KAGRA
- \* Joris van Heijningen: Geometric contoured Euler springs for vertical vibration isolation in future gravitational wave detectors
- \* Saturo Takano: Newtonian noise measurement by Torsion-Bar Antenna
- \* Giacomo Ciani: The Cryomirror project for fast payload cooldown