GWIC 3G report

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ICRR, U.Tokyo

Takaaki Kajita

Introduction

- With the recent first detections of gravitational waves by LIGO and Virgo, it is both timely and appropriate to begin seriously planning for a network of future gravitational-wave observatories, capable of extending the reach of detections well beyond that currently achievable with second generation instruments. At its 2016 meeting, GWIC appointed a standing subcommittee (chaired by Jay Marx) to coordinate the activities of the community toward third generation detectors.

https://gwic.ligo.org/3Gsubcomm/

members

co-Chairs

Michele Punturo

Dave Reitze

Members

Federico Ferrini

Takaaki Kajita

Vicky Kalogera

Harald Lueck

Jay Marx

David McClelland

Sheila Rowan

Bangalore Sathyaprakash

Recording Secretary: David Shoemaker

Sub-committees

- **Science Drivers for 3G detectors**: commission a study of ground-based gravitational wave science from the global scientific community, investigating potential science vs architecture vs. network configuration vs. cost trade-offs, recognizing and taking into account existing studies for 3G projects (such as ET) as well as science overlap with the larger gravitational-wave spectrum. (V. Kalogera, B. Sathyaprakash)
- **Coordination of the Ground-based GW Community**: develop and facilitate coordination mechanisms among the current and future planned and anticipated ground-based GW projects, including identification of common technologies and R&D activities as well as comparison of the specific technical approaches to 3G detectors. Possible support for coordination of 2G observing and 3G construction schedules. (H. Lueck, D. McClelland)
- **Networking among Ground-based GW Community**: organize and facilitate links between planned global 3G projects and other relevant scientific communities, including organizing: (D. Reitze, M. Punturo)

Sub-committees (cont'd)

- **Agency interfacing and advocacy**: identify and establish a communication channel with funding agencies who currently or may in the future support ground-based GW detectors; communicate as needed to those agencies officially through GWIC on the scientific needs, desires, and constraints from the communities and 3G projects (collected via 1) - 3) above) structured in a coherent framework; serve as an advocacy group for the communities and 3G projects with the funding agencies. (S. Rowan)
- **Investigate governance schemes**: by applying knowledge of the diverse structures of the global GW community, propose a sustainable governance model for the management of detector construction and joint working, to support planning of 3rd generation observatories. (F. Ferrini, J. Marx)

Time line

Time Scales for Completing Our Work

- Subcommittees will work over the next 12 months to assemble their reports to have a preliminary report and set of recommendations by the 2018 GWIC meeting.
- Preliminary report will be broadly circulated for comment and input among the relevant communities.
- Interim report not later than December 2018 delivered to relevant communities and GWAC
- Final report sometime in 2019

(As of GWIC 2017 meeting on July 9, 2017:
Report by D. Reitze)

KAGRA's contribution to GWIC-3G (at present)

- The present members from KAGRA are:
  - T. Kajita
  - M. Ohashi (Governance sub-group)
  - M. Ando (R&D coordination sub-group)