

Latest status of KAGRA

Hisaki Shinkai^{1,*}

¹*Faculty of Information Science & Technology, Osaka Institute of Technology,
Kitayama, Hirakata City, Osaka 573-0196, Japan*

on behalf of KAGRA collaboration

We report the latest status of KAGRA[1,2], a new interferometric GW detector with two 3 km baseline arms at Kamioka, Gifu, Japan. KAGRA's design is similar to the second generations of Advanced LIGO and Advanced Virgo, but it has two unique features. Firstly, it is located in an underground site to reduce seismic noise. Secondly, KAGRA's test masses are sapphire mirrors that are designed to be operated at cryogenic temperatures (~ 20 K) to reduce thermal noise. KAGRA is a resonant sideband extraction interferometer, and is expected to reach a sensitivity equivalent to those of Advanced LIGO and Advanced Virgo; that is, $2 \times 10^{-24}/\sqrt{\text{Hz}}$ at 100 Hz.

KAGRA had performed test operations twice (in 2016 [3] and 2018 [4]), and finished all the installations by the end of April 2019. KAGRA plans to start joint observation with LIGO/Virgo from fall 2019, and extensive commissioning is on-going. In this talk, we report the latest status of KAGRA, and prospects for its contributions to GW network.

Reference:

- [1] <https://gwcenter.icrr.u-tokyo.ac.jp/en/>
- [2] KAGRA collaboration, Nature Astronomy 3 (2019) 35 [arXiv:1811.08079]
- [3] KAGRA collaboration, Prog. Theor. Exp. Phys. (2018) 013F01 [arXiv:1712.00148]
- [4] KAGRA collaboration, arXiv:1901.03569

*Electronic address: hisaki.shinkai@oit.ac.jp