

Ground-based gravitational-wave detector KAGRA – status and future prospects –

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KAGRA is a ground-based interferometric gravitational-wave detector with kilometer-scale arms as well as LIGO and Virgo. There are two unique features in KAGRA: one is constructed at the underground site and the other is using cryogenic sapphire mirrors for the main mirrors. Underground site provides a quite environment and is effective to reduce the seismic noise. Utilizing cryogenic sapphire mirrors reduce thermal noise of mirrors and their suspensions, which is one of problematic and fundamental noises for the interferometric gravitational-wave detectors. These two features are also important for the next-generation ground-based gravitational-wave detectors, so KAGRA is considered as the prototype of the next-generation detectors. KAGRA joined the fourth international observing run (O4) in May, 2023 for one month. After that, KAGRA once stopped the observing run and restarted interferometer commissioning for improving sensitivity. In this talk, Current status of KAGRA and its future prospects are reported.

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