

## V223a Status of KAGRA

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Advanced LIGO, which consists of two gravitational wave detectors in the US, has detected several gravitational wave signals from black hole binary coalescences since coming on line in September 2015. Since being joined by the Virgo gravitational wave detector built near Pisa, Italy, it has also detected a neutron star binary coalescence with optical, gamma-ray and other electromagnetic counterparts. Further improvement of source localization is extremely important for the observation of electromagnetic counterparts, so it is desirable to establish an international cooperative observation network including LIGO, Virgo and the KAGRA detector in Japan. The large-scale cryogenic gravitational wave telescope KAGRA is a project involving more than 70 universities and institutes in Japan and overseas. KAGRA is a laser-interferometric gravitational-wave telescope with a baseline length of 3 km and is installed about 200 meters underground at Mt. Ikenoyama, in Hida City, Gifu Prefecture, where seismic activity is about 1/100 of that at the ground surface. The effects of ground vibration on the mirrors are further reduced with multistage pendulums. In order to reduce the thermal noise from the interferometer mirrors and suspension wires, the test masses and nearby parts of the suspension system are cooled down to about 20 K. From March to April 2016, we conducted a room temperature test operation with a simple interferometer configuration. In this presentation we will report progress toward the cryogenic operation planned for the first quarter of 2018.