

V263a Vibration isolation for KAGRA: status report on the beam splitter suspension test and installation

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KAGRA is an underground interferometric gravitational wave detector currently under construction in Kamioka, Gifu prefecture. It aims to detect gravitational radiation from astronomical sources including core collapse supernovae and binary mergers of either black holes, neutron stars or both. As illustrated by the first LIGO detection, this type of measurement requires a strain sensitivity of the order of 10^{-21} for certain astronomical events. Such a goal can only be achieved by using high performance vibration isolation systems for the main optical components. In KAGRA these suspensions come in three different configurations, of which the Type B is used for the beam splitter and signal recycling mirrors. The Type B suspension comprises the payload, three geometric anti-spring filters for vertical isolation and one inverted pendulum for horizontal isolation. The payload comprises the optic, its marionette and their recoil masses which hold local displacement sensors and coil magnet actuators used for damping the resonant modes of oscillation of the suspension itself. The payload also relies on an optical lever to monitor the tilt of the optic from the ground. This presentation reports the results of a test of the Type B suspension with a dummy beam splitter. The test was carried out at the KAGRA site in a clean environment prior to the assembly of the real beam splitter suspension. Transfer functions, comparison with simulations and plans for the final suspension will be given.