V222a Development of the Vibration Isolation Systems for KAGRA

Fabian Peña Arellano, R. Takahashi, T. Sekiguchi, K. Okutomi, A. Shoda, Y. Fujii, Mark A. Barton, N. Hirata, H. Ishizaki, T. Akutsu, N. Ohishi, Y. Aso, R. Flaminio (NAOJ), K. Yamamoto, T. Uchiyama, O. Miyakawa, H. Kamiizumi (ICRR), E. Majorana (INFN), K. Agatsuma, J. van Heijnigen (NIKHEF), R. DeSalvo (California State University Los Angeles)

KAGRA, a cryogenic laser-interferometric gravitational wave detector, currently in construction at Kamioka (Gifu Prefecture, Japan), is one of a number of planned advanced detectors throughout the world. To keep out seismic and other mechanical noise, the key optics of the interferometer will be suspended on multi-stage vibration isolation systems using pendulums and inverted pendulums for horizontal isolation and soft geometric-antispring filters for vertical, with the number of stages dependings on the sensitivity of the optic. The bottom stage of each system includes a marionette for pitch and yaw position control and a recoil mass with shadow sensors and voice coil actuators for damping. We report on the status of design, construction and installation of the vibration isolation systems.