

# Investigation of crackling noise in the vibration isolation system of KAGRA gravitational wave detector(1)

## Abstract

The purpose of our experiment is to investigate crackling noise in the vibration isolation system of KAGRA gravitational wave detector. Crackling noise includes a broad class of noise in nonlinear systems due to changing external conditions. It is possible that crackling noise in the vibration isolation system would couple into KAGRA's readout. In our case, we investigate the crackling noise in the GAS (Geometric Anti-Spring) filter, part of the vibration isolation system of KAGRA. A Michelson interferometer optical apparatus was designed to investigate if the magnitude of crackling noise would be problematic for KAGRA to achieve the expected sensitivity.