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# Development of a spring-mass vibration damping system for a Jinping bolometric demonstrator experiment

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To achieve ultra-low noise level and high energy resolution in rare event searches, bolometric detectors require an extremely low-vibration working environment. In this study, we present the design, implementation, and performance evaluation of a spring-mass vibration damping system developed for a bolometric demonstrator experiment for neutrinoless double beta decay ($0\nu\beta\beta$) search at the China Jinping Underground Laboratory (CJPL). Mechanical noises from the experimental setup, particularly those from the pulse tube cryocoolers of the cryogenic system, are measured. The performance of the spring-based vibration damping system is studied in a laboratory environment, with a focus on the 0–100 Hz low-frequency range, which significantly impacts data acquisition of the $0\nu\beta\beta$ experiment. Insights for the system improvements for the future experiments are also discussed.

## Collaboration you are representing

CUPID-China

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