

Vibration Reduction of Pulse Tube Cryocooler for High Purity Germanium Detector

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HPGe detectors require cooling to cryogenic temperatures (<100 K) to operate as gamma-ray detectors, which is a vibration-sensitive high-resolution detector. The widening use of mechanically cooled technology is replacing the traditional use of liquid nitrogen for cooling a HPGe detector. Thus, vibration reduction of mechanical cooler is vital for HPGe detectors. Low-vibration pulse tube cooler is selected. The authors incorporate active vibration control in addition to passive isolation from mounting structures. The vibration amplitude is reduced dramatically. The vibration or microphone noise created in HPGe detector is reduced dramatically by vibration reduction.