

A Non-Tube Inertance Device for Pulse Tube Cryocoolers

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Abstract - Inertance Pulse Tube Cryocoolers make use of a long tube for phase shifting and optimization of performance. This long tube presents a challenge for packaging in most applications, and is also a concern for environments where vibration is present (e.g., launch). In the present invention, a gap configuration is used in place of the tube, resulting in a more compact inertance device. Using the SAGE software, the performance of this new device is found to be comparable to that of an inertance tube. Significantly, this new invention offers the flexibility to change the inertance value during testing and operation, which cannot be done with the tube configuration.

Keywords - Pulse Tube, Cryocoolers, Inertance Tube, Phase Shift Devices.

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