

Model Development and Verification of Mechanical Phase Shifter for Pulse Tube Refrigerator

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The design of a successful cryocooler must fulfill several requirements. A common application for cryocoolers is sensors, since many require cryogenic temperatures to operate effectively. These sensors are commonly implemented in settings, such as satellites, where reliability, size, and efficiency are essential. Pulse tube refrigerators are very reliable since there are no moving parts operating at cryogenic temperatures. With reliability conditions satisfied, the next step is to minimize size, while maximizing efficiency. The purpose of this project is to produce a mechanical phase shifter that is smaller than current phase shifters, yet still produces the optimum phase shift between the flow and pressure waves.