



## Second Laureate Applied Research



- ◆ **Project Title:** Design and Construction of Pulse Tube Cryocooler
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### Abstract:

The use of very low temperatures for application in computer hardware products, space, military, medicine, and electrical systems requires the achievement of high performance cryogenic coolers. Pulse tube refrigerator as a reliable cryogenic cooler, contains no moving parts at its cold head, thus having considerable system advantages over the most other types of cryogenic refrigerators such as Stirling and Gifford-McMahon. A pulse tube refrigerator contains several components such as, pressure wave generator, a pulse tube, the stainless steel regenerator, cold and hot heat exchangers, an orifice, one bypass line and a reservoir. Experimental investigation on a single stage pulse tube refrigerator is the principal goal of this research. In this respect, an experimental rig of a pulse tube refrigerator, consisting of a pressure wave generator, a pulse tube and a vacuum subsystem has been designed and constructed. This cryocooler has been designed to produce low temperatures in the range of 30-80 K.