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C1Or2A-03: Acoustic expanders for use in recuperative cryocoolers

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Cryogenic expanders are complex and expensive components in recuperative-cycle cryocoolers. To simplify cryogenic expander technology, we propose a novel acoustic expander. The acoustic expander utilizes sound waves in the expansion process without the need for complex moving parts at low-temperature; in contrast to turbine or piston expanders that require spinning shafts or moving displacers at low-temperature. This work models the operation of the acoustic expander and presents preliminary experiments that verify its function.

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