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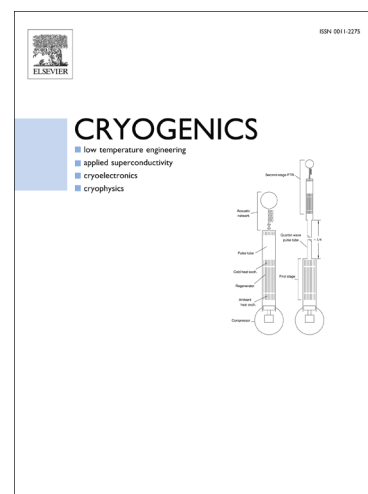
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**Acoustic field modulation in regenerators**J. Y. Hu <sup>a</sup>, W. Wang <sup>a,b</sup>, E. C. Luo <sup>a</sup>, Y. Y. Chen <sup>a</sup>

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**Abstract**

The regenerator is a key component that transfers energy between heat and work. The conversion efficiency is significantly influenced by the acoustic field in the regenerator. Much effort has been spent to quantitatively determine this influence, but few comprehensive experimental verifications have been performed because of difficulties in modulating and measuring the acoustic field. In this paper, a method requiring two compressors is introduced and theoretically investigated that achieves acoustic field modulation in the regenerator. One compressor outputs the acoustic power for the regenerator; the other acts as a phase shifter. A RC load dissipates the acoustic power out of both the regenerator and the latter compressor. The acoustic field can be modulated by adjusting the current in the two compressors and opening the RC load. The acoustic field is measured with pressure sensors instead of flow-field imaging equipment, thereby greatly simplifying the experiment.

*Key words:* regenerator; acoustic field; modulation; pulse tube cryocooler

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