

## Simulation of streaming in a tapered resonator – Brian C. Tuttle and Victor W. Sparrow

In 1997 Olson and Swift [*Cryogenics* **37** (12) 769–776 (1997)] investigated acoustic streaming in conical tubes of varying taper angle of a pulse tube refrigerator to increase the efficiency. They found that an optimal taper angle existed that would minimize Rayleigh streaming in the tube. The present research is aimed at numerically simulating this taper effect on the Rayleigh streaming. The 2-D nonlinear acoustic numerical approach of Sparrow and Raspet [*J. Acoust. Soc. Am.* **90** (5) 2683-2691 (1991)] is modified for tapered geometries matching those of Olson and Swift. The method for grid generation and stretching will be discussed. Results of this numerical simulation will be compared to the published experimental results and will aid in a deeper understanding of acoustic streaming. [Work supported by the Office of Naval Research.]

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