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Experimental and numerical characterization of the sound pressure in standing wave acoustic levitators

Review of Scientific Instruments **85**, 015110 (2014); <https://doi.org/10.1063/1.4861197>A. Stindt¹, M. A. B. Andrade², M. Albrecht¹, J. C. Adamowski³, U. Panne^{1,4}, and J. Riedel^{1, a)}[View Affiliations](#)[View Contributors](#)[PDF](#)

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ABSTRACT

A novel method for predictions of the sound pressure distribution in acoustic levitators is based on a matrix representation of the Rayleigh integral. This method allows for a fast calculation of the acoustic field within the resonator. To make sure that the underlying assumptions and simplifications are justified, this approach was tested by a direct comparison to experimental data. The experimental sound pressure distributions were recorded by high spatially resolved frequency selective microphone scanning. To emphasize the general applicability of the two approaches, the comparative studies were conducted for four different resonator geometries. In all cases, the results show an excellent agreement, demonstrating the accuracy of the matrix method.

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