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ABSTRACT SUBMISSION FORM

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THE NONLINEAR DYNAMICS OF LEVITATED SINGLE DROPS AND BUBBLES

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Ultrasonic positioning of single fluid particles in gas and liquid host environments has been used to experimentally investigate their nonlinear response to controlled stimuli. The large amplitude oscillatory responses of both drops in air and gas bubbles in liquids have been shown to display the usual nonlinear characteristics such as hysteresis, soft nonlinearity in the resonance frequency, and mode coupling. These nonlinear characteristics must be documented and understood before the analysis of the single fluid particle dynamics can be used to gather information on the thermophysical properties of fluids. For example, the calculation of the surface tension and viscosity of the drop liquid must involve analytical or numerical models which take into account these detailed nonlinear mechanisms. A rigorous study of the influence of high intensity acoustic and electric fields on the drop and bubble responses allows the initial estimate of the interfering influence of ground-based levitation. The ful 1 assessment of this indirect effect must also be obtained prior to the valid application of levitation techniques to such areas as thermophysical properties and transport phenomena measurements. New experimental results and comparison with available nonlinear theories and numerical models will be presented.

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Name of author: Eugene H. Trinh

(Details on Registration Form)

Subject classification keyword(s): Physical Acoustics, Ultrasonic Levitation

Desired method of presentation: ☒ Lecture ☐ Poster

❑ "Preferred ☒ Only

Additional requirements: ❑ a second projector for 50 mm x 50 mm slides

D a PAL VHS/VCR Monitor

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Representing all co-authors named in the abstract,

Date: 5-5-95 Signature: Eugene Trinh

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