

Abstract Submitted
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A superposition test for the emergence of nonlinearities in a laser irradiated spherical absorber ESHEL FARAGGI, IUPUI, Indianapolis, Indiana; and Research and Information Systems, LLC, Carmel, Indiana, BERNARD GERSTMAN, Florida International University, Miami, Florida — The principal of linear superposition is investigated in the computational system of a solid spherical absorber immersed in a transparent aqueous medium and illuminated by a laser pulse. The absorber is exposed to a single top-hat pulse and to a fraction of the pulse from which a superimposed response is calculated. The results clearly show the transition of the system from a low fluence linear state where superposition is valid to a high fluence nonlinear state where the superposition is violated. The procedure described in the text can be used to find the transition to nonlinearity in a given excited system. Comments are also given for the relevance of these results to the general study of dynamical systems.

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