

Abstract Submitted
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About the Equivalence of Phase Retrieval Methods Employed in Nonlinear Spectroscopy and Microscopy¹ LASZLO UJJ², Department of Physics, SSE, University of West Florida, ROHAN HEMASINHA³, Department of Mathematics & Statistics, University of West Florida — It is well known that the generalized Kramers-Kronig relationship is able to retrieve the phase of a signal from measured power spectra. This phase recovery is a critical procedure in nonlinear optical spectroscopy, e.g. coherent Raman time domain or frequency domain spectroscopy. Several other methods have been developed and being used in the past: notably, nonlinear fitting and maximum entropy method. A firm mathematical comparison of the methods including the effects of final signal sampling and their merit of fidelity will be presented. Attention is given to numerical implementation of the phase retrieval procedure to put it into practice in coherent anti-Stokes Raman microscopy. Phase retrieval examples using all the above methods are taken from earlier and recently recorded spectra.

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