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Simultaneous Recovery of Sample And Coherence Information in Coherent Diffractive Imaging

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Abstract:
Coherent diffractive imaging (CDI) is a powerful method whereby the transmission function of an object can be recovered using certain, typically, iterative algorithms. Recently, it has been shown that CDI not only works well with coherent illumination but also with partially coherent illumination. In this work, we use simulated results to demonstrate successful retrieval simultaneously of an object's transmission function and of the characteristic coherence properties of the illuminating wavefield without a priori knowledge. Our approach is based on using a comprehensive modal model of the illuminating beam such that the free parameters representing the coherence properties can be fit during the recovery process.

Keywords

coherent diffractive imaging, Fresnel coherent diffractive imaging, partial coherence.

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