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# Enhanced resolution imaging in strongly scattering media

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## Abstract

Imaging in complex media is challenging as multiple scattering leads to loss of directional information and coherence. Unless the complex propagation medium is known, or can be accurately estimated, coherent imaging typically fails. We propose an approach that allows for imaging in such strongly scattering media by accurately estimating the sensing matrix in the complex propagation medium. The estimation can be done using both conventional optimization algorithms and neural networks. An essential assumption is that large and diverse data sets are available and each vector of this data corresponds to a sparse scene. No knowledge about the sparse scene is necessary. Enhanced resolution, better than in homogeneous media is achievable due to an effective array aperture that is larger than the physical array due to multiple scattering. The robustness of the proposed approach will be illustrated with numerical simulations.

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