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Reconstruction of Objects in Random Media Based on Their Shadow Patterns[1] BEN ROGERS, ROBERT WAGNER, QICHANG SU, RAINER GROBE, Illinois State University — Methods for using laser light to detect multiple unknown objects inside of random media are discussed. The measured shadow pattern can be decomposed into its component "eigenshadows" by diagonalizing the covariance matrix. It is shown that the resolution of objects that are upstream and closer to the incoming laser light is lower than the resolution of objects further downstream, and techniques to improve the resolution of objects are also discussed. Finally, a method of detecting objects by minimizing χ^2 while scanning through various positions for the object is introduced.

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