



Exploiting the speckle noise for compressive imaging

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Résumé en anglais	<p>An optical setup is proposed for the implementation of compressive sensing with coherent images. This setup specifically exploits the natural multiplicative action of speckle noise occurring with coherent light, in order to optically realize the essential step in compressive sensing which is the multiplication with known random patterns of the image to be acquired. In the test of the implementation, we specifically examine the impact of several departures, that exist in practice, from the ideal conditions of a pure multiplicative action of the speckle. In such practical realistic conditions, we assess the feasibility, performance and robustness of the optical scheme of compressive sensing. (C) 2011 Elsevier B.V. All rights reserved.</p>
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