Speckle in Multimode Fibers

Specifically, we propose a speckle imaging model that consists of a lightweight encoder-decoder architecture and a weighted loss function, enabling high-fidelity image transmission through ...

Experimental results demonstrate strong visual and quantitative performance across diverse generations of MMF speckle image. The evaluation is based on SSIM and loss metrics.

Here we give the details of the algorithm developed to extract quantitative strain information from the recorded speckle pattern scattered out of a multimode fiber.

High spatial resolution typically requires a large number of phase channels. In this paper, we propose and demonstrate a high-resolution wavelength-scanning multimode fiber imaging system, enabled by ...

This work introduces an in-situ nano-displacement measurement system via a multimode fiber probe with superoscillatory speckles and deep learning.

Fiber specklegram sensors (FSS) are a kind of sensor based on the intermodal interference of multimode optical fibers (MMFs) . When coherent light is incident into a multimode ...

This study has been part of a long-term effort within our group to understand how speckle patterns --those seemingly random intensity patterns produced by multimode fibers--can be transformed into ...

Our findings offer practical guidance for selecting appropriate demodulation techniques in multimodal sensing applications and highlight the potential of speckle-based systems for robust, low ...

We present a technique that utilizes cascaded resonant cylindrical piezoelectric ceramics and multimode optical fibers wound around them to effectively mitigate laser speckle.

A coherent superposition of mode fields in a multimode fiber (MMF) can introduce a speckle pattern, of which the statistical properties are highly dependent on the modal conditions.

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