

EVALUATION OF TWO-FRAME RANDOM PHASE SHIFTING INTERFEROMETRY THROUGH IMPROVED SELF-TUNING PHASE-SHIFTING ALGORITHM

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Two-shot phase-shifting interferometry is actively explored in recently year for its noticeable advantages. However, most state-of-the-art two-frame random phase shifting algorithm that is used in two-shot phase-shifting interferometry may be affected by the fact such as complex intensity distribution and the fringes number of interferogram. We present an improved self-tuning phase-shifting algorithm to overcome the difficulty. The present method firstly determines the phase shift in its refined range exhaustively. Then an iterative method is used to extract the interest phase. Thus it can evaluate both the phase shift and the interest phase accurately and robustly. Another advantage of the proposed algorithm is that it is a general phase-shift extraction algorithm and can be implemented easily in many applications. Both numerical simulations and experimental data demonstrate the high accuracy and high efficiency of our proposed method.

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