TECHNICAL NOTE

Complex division as a common basis for calculating phase differences in electronic speckle pattern interferometry in one step

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We point out that all formulas for calculating the phase map of object deformations in one step can be described by the same simple formalism of a complex division.
OCIS codes: 120.5050, 120.6160, 120.2650, 100.5070.

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The composite formula for one-step calculation of the phase difference with the four-step algorithm is

$$\Delta\varphi = \arctan\left(\frac{\Delta I_{42}'\Delta I_{13} - \Delta I_{42}\Delta I_{13}'}{\Delta I_{13}'\Delta I_{13} + \Delta I_{42}'\Delta I_{42}}\right), \qquad (3)$$