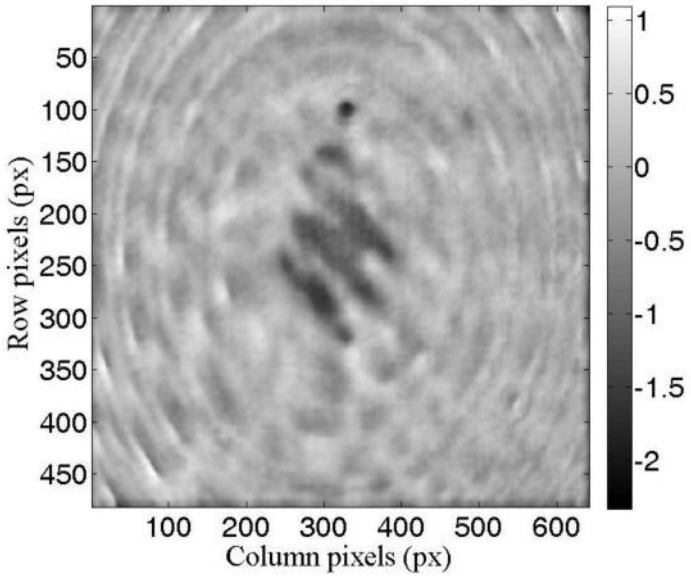

Fig. 9. Difference between the reconstructed phases shown in Fig. 12 using the proposed method and the least-squares method

As can be seen from Fig. 9 there is a good agreement between both measures. The *rms* (root-mean-square) error of the difference between both reconstructed phases is 0.3 rad. On the other hand, the temporal frequency between interferograms obtained by the proposed and the least-squares methods is $\bar{\omega}_0$ = 0.7 rad and $\bar{\omega}_0$ = 0.85 rad respectively.

5. Conclusions

In this work, we have proposed a self-tuning two-step phase-shifting algorithm that doesn't need to known the phase-step between interferograms. This phase-step can be any value between [-π, π]. The proposed method doesn't need to iterate, however our technique uses an exhaustive search strategy. This method can be used with any kind of fringe pattern as it doesn't need to measure the intensity of the reference beam and no suppositions are made to the fringe spatial frequencies, background and modulation maps. We have tested the proposed method to simulated and real interferograms, and we have shown a very good performance of the proposed method.

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