

Fig. 10. Wavefront error computed by the commercial HASO3 sensor.

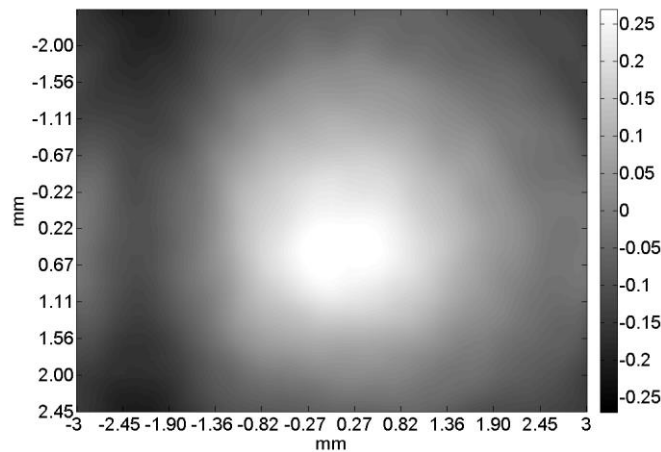


Fig. 11. Wavefront error computed by the proposed Optical Flow algorithm.

## 5. Conclusions

In conclusion, we have presented a straightforward, robust, dense, and accurate Shack-Hartmann spot dislocation map determination method based on a regularized optical flow algorithm that does not require obtaining the spot centroids. This approach is capable to measure in presence of strong noise, background illumination and spot modulating signals; that are the typical limiting factors of the traditional centroid detection algorithms. Additionally, the dense dislocation maps obtained by the proposed approach can be easily unwrapped, if needed. We have tested the algorithm with simulations and experimental data obtaining very satisfactory results. A complete MATLAB package that can reproduce all the results can be downloaded from [<http://goo.gl/XbZVOr>]

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