

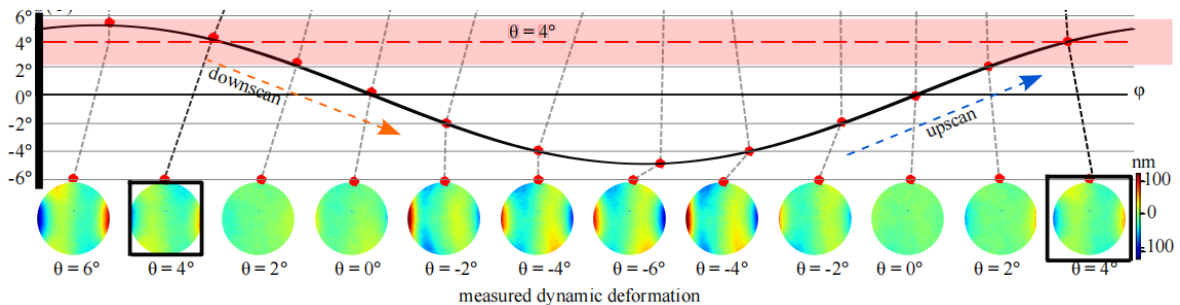


Full Scan-angle Micromirrors Deformation Characterization by DHM®

SPIE. PHOTONICS EUROPE

SPIE Photonics Europe 2022,
3 - 7 April 2022, Strasbourg, France

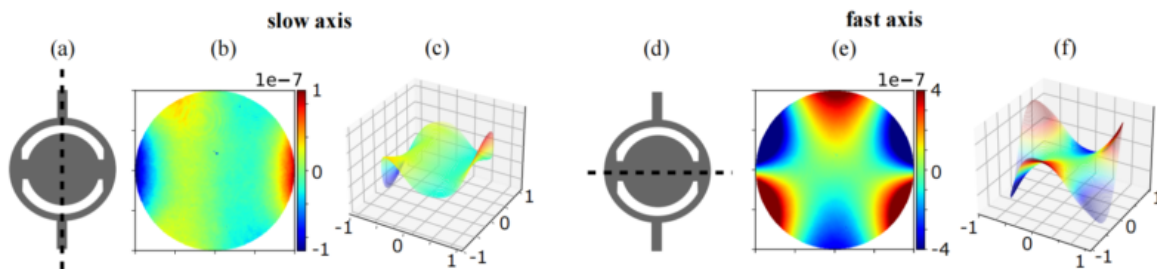
Congratulations to our DHM's users at [Silicon Austria Labs](#) who present their latest achievement in [SPIE Photonics Europe 2022](#). Their reported methods enable continuous dynamic deformation measurement of MEMS micromirror **at any scan angle**.



Slow axis upscan and downscan micromirror dynamical deformation for a scan angle of $\pm 3.9^\circ$

Optical Aberrations Characterization

Dynamic measurements of the deformations enable to evaluate the optical aberrations at any phase of the mirror oscillations. For instance, at maximum scan angle of the micromirror, trefoil is visible for the fast axis when the low axis shows trefoil and comma

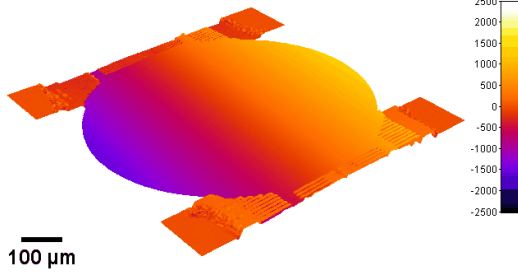


The surface plot of measured dynamic deformation at maximum scan angle. Aberration such as Trefoil is visible for fast axis (28530 Hz). Slow axis (14367 Hz) has Trefoil, Comma as dominant aberrations.

[Learn More](#)

DHM primary data are 4D measurements (3D + time)

The DHM first provides **4D data (3D + time)**. Vibrations, distortions and optical aberrations are then accurately calculated.



In contrast, laser doppler vibrometers LDV first measure the vibrations velocity. An integration procedure, subject to drift, is necessary to recover the displacements.

[Learn More](#)



**Pooja thakkar, Junior Scientist
Photonic Systems, Silicon Austria Labs**

"I am very much impressed by the DHM, on how we can use the laser trigger pulses down to 7.5ns and record the high resolution- surface topographies of a high-speed scanning micromirrors. We received support from Yves on improving our measurements, to deal with high velocity at zero crossing of mirror. Also, I am grateful for his immediate responses and contribution to paper reviewing within a short notice period."



**Clement Fleury, Senior Researcher
Photonic Systems, Silicon Austria Labs**

"Besides having good enough resolution in all 4 dimensions to image such a small and mechanical deformation, the key aspect of stroboscopic holography for high deflection MEMS mirror is to explore the parameter window space first (full field) contrary to a scanning technique – i.e LDV - that would do it frequency first. This enables easy and precise measurement, and a straightforward processing scheme."



**Dr. Jaka Pribošek, Senior Scientist
Photonic Systems, Silicon Austria Labs**

"Experimental characterization of dynamic deformation at larger optical scan angles has for long time remained underexplored. Digital holographic microscopy offers superior lateral, axial and temporal resolution, allowing us to study peculiar effects in angle resolved membrane dynamics. Lyncée tec offers you the right tool for the job."

OneTreePlanted

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