

Proceedings of the 6th International Conference on

Optical Measurement Techniques for Structures & Systems III



The conference was organized within the framework of the Scientific Research Community OPTIMESS, supported by the Research Foundation-Flanders (FWO)

Antwerp, Belgium

8-9 April 2015



Joris Dirckx
Editor

© Copyright Shaker Publishing 2016

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher.

Printed in Germany.

ISBN 978-90-423-0439-0

Shaker Publishing
St. Maartenslaan 26
NL 6221 AX Maastricht, The Netherlands
Tel.: 0031-43-3500424
Fax: 0031-43-3255090
[http:// www.shaker.nl](http://www.shaker.nl)

TABLE of CONTENTS

CONTRIBUTIONS / CHAPTERS

1. Sensing of in-plane displacement using circular grating Talbot interferometer – *Schilpi Agarwal* – p.1
2. Spectral radiance measurement at specific points of a light emitting diode – *Fiona Belfio* – p. 13
3. Production Monitoring of a RTM Automotive Control Arm by means of Fibre Optic Sensors – *Gabriele Chiesura* – p. 21
4. Recording and Processing Techniques for 3D Images of a Precision Optical Surface – *M.V. Chirkin* – p. 31
5. Projection-based polygon estimation in X-ray computed tomography – *Andrei Dabravolski* – p. 41
6. Fast flame temperature estimation using a point diffraction interferometer and non-negative least square method – *E. de la Rosa Miranda* – p. 51
7. Damage monitoring using Continuous Scanning LDV methods: numerical approach – *Dario Di Maio* – p. 61
8. Developments in Opto-Electronic Holography (OEH) for measurement of sound-induced eardrum motion – *Ivo Dobrev* – p. 73
9. Spectral ray tracing to model the spectrum of a luminaire equipped with an interference filter – *Guy Durinck* – p. 85
10. Transformer core vibration measurements by means of laser scanning vibrometer – *S. Gorji Ghalamestani* – p. 95
11. Digital Image Correlation measurements of jaw bending in living stag beetles – *Jana Goyens* – p. 107
12. Correction of laser Doppler vibrometry measurements affected by steering mirror vibration – *Ben Halkon* – p. 117

13. Wavefront-based active alignment of multi-element optical systems – *Reik Krappig* – p. 127
14. Characterization of butane flames under magnetic field using digital speckle pattern interferometry – *Manoj Kumar* – p. 137
15. Digital holography for measurement of natural convective heat transfer coefficient along the surface of electrically heated wire – *Varun Kumar* – p. 149
16. Modal analysis of a composite automotive component using fibre Bragg grating sensors embedded via Resin Transfer Moulding – *Alfredi Lamberti* – p. 161
17. Phase retrieval algorithm by fitting ellipses and computing Euclidean Distances – *Francisco Alejandro Lara-Cortes* – p. 171
18. Precise measurement of grinded aspherical and freeform optical surface shape by digital holography – *Vit Lédl* – p. 181
19. 3D deformation measurement with more than 2 cameras and digital image correlation: Approach, applications and benefit – *Ralf Lichtenberger* – p. 193
20. Identification of vibration modes from sub-microstrain Fiber-optic Bragg Grating data using an improved wavelength detection algorithm – *Patrizia Moretti* – p. 203
21. Microscopic laser triangulation in harsh industrial conditions for the inspection of microstructured surfaces – *Thomas Mueller* – p. 215
22. Fringe projection profilometry applications: preliminary results for measurements of a swordfish – *A. Nava Vega* – p. 225
23. Defining geometrical position information of a thermal camera and object curvatures using thermography – *Jeroen Peeters* – p. 233
24. Holographical arrangement employing frequency and phase modulation of reference wave in time average digital holographic interferometry – *Pavel Psota* – p. 243

25. Profiling oil-water flows in microchannel: preliminary results using Optical Feedback Interferometry – *E. E. Ramirez-Miquet* – p. 251
26. Low cost automated setup for fringe projection profilometry – *Uriel Rivera-Ortega* – p. 259
27. Applications and interpretations in laser vibrometry: confident steps in the light direction – *Steve Rothberg* – p. 267
28. Fiber-coupled interferometric sensor for high-speed measurement of optical surfaces – *Markus Schulz* – p. 277
29. Real-time 3D lensless imaging through scattering media – *Alok Kumar Singh* – p. 289
30. Comparative study of NDT inspection methods - Part A: defect tracing in Carbon Fiber Composite Laminates – *Gunther Steenackers* – p. 297
31. Sand movement in a sand-bed scour hole – *Takayuki Tsutsui* – p. 305
32. Accurately measuring 2D position using a composed grid pattern and DTFT – *Sam Van Dam* – p. 313
33. Real-time phase unwrapping in Fourier space using a graphics processing unit – *Sam Van der Jeught* – p. 321
34. A dynamic region estimation method for cerebral perfusion CT – *Geert Van Eyndhoven* – p. 331
35. Dynamic Flat field correction in X-ray computed tomography – *Vincent Van Nieuwenhove* – p. 343
36. Using super-resolution images to improve the measurement accuracy of DIC – *Yueqi Wang* – p. 353
37. Visual flow measurement using a fiberscope system combined with twinkling laser light sheet technique – *Yoshifumi Yokoi* – p. 363