

INTERNATIONAL WORKSHOP ON STRAIN MEASUREMENT IN EXTREME ENVIRONMENTS

Tuesday 28th August, 2012

THE UNIVERSITY OF GLASGOW

Glasgow, Scotland

Organised by

Eann Patterson, University of Liverpool,

John Lambros, University of Illinois at Urbana-Champaign

We wish to thank the following for their contribution to the success of this conference: European Office of Aerospace Research and Development. Air Force Office of Scientific Research, United States Air Force Research Laboratory <<http://www.london.af.mil>>



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Institute of Physics
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*Preceding the Institute of Physics Conference on Modern Practice in Stress & Vibration
Analysis on 29-30 August 2012.*

WORKSHOP PROGRAMME

08.30 – 09.00 Registration

SESSION 1 MEASUREMENT CHALLENGES

(Chair: Eann Patterson, University of Liverpool)

09.00 – 09.10 Introductory Remarks

09.10 – 09.40 **Challenges and developments in high temperature strain measurement**

Jerry Lord, NPL

09.40 – 10.10 **Multiscale study of thermomechanical fatigue of a Ni-based superalloy**

John Lambros, University of Illinois

10.10 – 10.30 COFFEE BREAK

SESSION 2 HIGH TEMPERATURE IMAGE CORRELATION

*(Chair: Ravi Chona,
US Air Force Research Laboratory)*

10.30 - 11.00 **Non-contacting high-temperature strain measurement using active imaging digital image correlation**

Bing Pan, Beijing Institute of Aeronautics and Astronautics

11.00 – 11.30 **High-temperature strain measurement using DIC**

Philip Withers, University of Manchester

11.30 – 12.00 **Digital image correlation at high temperatures for fatigue and phase transformation studies**

Hans-Juergen Maier, University of Paderborn

12.00 – 12.30 **Panel discussion**

Chair: R. Pollak; Members: J. Lord, J. Lambros, B. Pan, P. Withers, H-J Maier

12.30 – 13.45 LUNCH

SESSION 3 EXTREME MEASUREMENT

*(Chair: John Lambros,
University of Illinois at Urbana Champaign)*

- 13.45 – 14.15 **US AirForce needs for extreme strain measurement**
Ravi Chona, US Air Force Research Laboratory
- 14.15 – 14.45 **Temperature field measurement in titanium alloy during high strain rate loading**
Nicolas Ranc, Arts et Metier ParisTech
- 14.40 – 15.05 TEA BREAK

SESSION 4 LARGE AND FAST MEASUREMENTS

(Chair: Dr Ali Sayir, AFOSR)

- 15.05 – 15.35 **An experimental study of the dynamic bucking behaviour of stiffened aerospace panels**
Carol Featherston, University of Cardiff
- 15.35 – 16.05 **Aspects of the behaviour of aluminium and iron at ultrahigh strain rates**
Jonathan Crowhurst, Lawrence Livermore Nat. Lab.
- 16.05 – 16.35 **DIC measurement of a high-frequency vibrating structural panel using pulsed laser illumination**
Christopher Sebastian, University of Liverpool

16.35 – 17.05 Panel Discussion

*Chair: J. Lambros; Members: R.Chona, N.Ranc,
C.Featherston, J.Crowhurst & E. Patterson*

- 17.05 – 17.15 Closing Remarks

19.00 WORKSHOP DINNER (Melville Room, University of Glasgow)

Note: Presentations will be 15-20 minutes with 10-15 minutes for discussion. In addition, there will be 30 minutes of chaired discussion/debate periods at the end of the morning and afternoon.

WHO SHOULD ATTEND ?

- Researchers interested in developing techniques for measuring strain at very high temperatures, very high frequencies, very large displacements and, or very high speeds.
- Modellers with a requirement to validate the predictions from simulations of strain fields for structures and components subject to extreme conditions.
- Designers/industrialists who need strain/stress data for engineering components/systems operating at the limit of material capability.
- ANYONE INTERESTED IN CHALLENGING PROBLEMS.

REGISTRATION

Please register on-line at <http://mpsva2012.iopconfs.org/home>

Workshop fee includes abstract booklet, refreshments in coffee and tea breaks, lunch and dinner (in the Melville Room at the University of Glasgow). Post-workshop papers will be published in a special issue of the Journal of Strain Analysis for Engineering Design.

Cost is £110 when registering and paying early on-line before 25th July, 2012. For registrations after 25th July, 2012 the cost is £140. A surcharge of £30 will be added for those who do not pay on-line at the time of registration.

ADDITIONAL INFORMATION

ACCOMMODATION

Accommodation is available at the Pond Hotel or Wolfson Halls at the University of Glasgow (within walking distance of the workshop and dinner venue). To book accommodation please visit the registration website.

TRAVEL

The University of Glasgow is a short taxi ride from Glasgow City Centre which can be reached by train from most UK cities (1 and 4½ hours respectively from Edinburgh and London). There is an international airport with connections to Europe and North America, as well UK regional airports.



Melville Room, University of Glasgow

For more information contact the organisers: eann.patterson@liverpool.ac.uk