



ACMC Annual General Meeting 4-5 June 1998 McMaster University Hamilton, Ontario

The Steering Committee of the **Association for Coordinate Metrology Canada (ACMC)** met last December at the National Research Council Canada (NRC) in Ottawa to plan the 1998 Annual General Meeting to be held at McMaster University on 4-5 June.

The Committee studied the evaluation sheets from the 1997 Annual General Meeting participants and as a result the upcoming meeting will have a new format. To provide more opportunities for dialogue with the speakers and with fellow participants, the meeting will be divided into three half-day segments. Each half-day segment will begin with a key presentation to all attendees by an internationally recognized expert followed by break-out parallel sessions chosen by attendees.

We are pleased to announce that we have secured three international speakers, well known for their understanding of CMMs and GD&T. These speakers will bring you up-to-date with issues important to CMM use today, as well as issues which may have significant impact on CMM activities in the future. Parallel sessions will be led by invited speakers and prominent members of ACMC.

The advantages of this format are twofold. First, participants will be able to customize their learning opportunities by selecting session topics which are most relevant to their work. Secondly, smaller, informal groups are more conducive to discussion and problem solving.

To ensure that the topics of the break-out sessions are appropriate, we ask that you indicate which sessions are of interest to you. **Simply circle three of the six listed on the reverse and fax to (613) 952-1394.** The final agenda and schedule will be forwarded to you along with a registration form.

Thank you for assisting in the planning of the 1998 Annual Meeting—we look forward to seeing you in Hamilton.

Key Presentations & Speakers

New Tools for Task Specific Uncertainty of CMM Measurements

Recent research results have shown that reasonable task specific uncertainty statements can be produced using generic performance data often found in the CMM manufacturer's specification sheet. This presentation will describe the technique, and demonstrate some user-friendly software which incorporates the method. The current status, limitations, and planned work will also be discussed.

Dr. Steven Phillips, NIST, USA

CMM Based Datum Reference Frame (DRF) Construction Insights

CMM software writers, programmers and operators will gain a better understanding of the fundamental processes of DRF construction, and consequently be more able to reliably create DRFs based on imperfect real Datum Features. Some subjects covered in this presentation include cartesian coordinate systems, tools of conceptual DRF construction, and physical DRF construction using CMM software.

William Tandler, Multi Metrics, Inc. USA

Future Developments at NPL in the field of high-accuracy CMMs

The accuracy of CMMs using traditional kinematic configurations is limited by the distortion of their geometry-defining elements caused by the finite weight of components and by thermal effects. This presentation will describe two innovative laser based approaches which can significantly reduce such effects and hence increase the potential accuracy of a CMM.

**Dr. Graham Peggs, Centre for
Length Metrology, National
Physical Laboratory, U.K.**

Parallel Sessions: Topics & Speakers

Circle the three (3) Break-out Sessions which you would like to attend, add your name and fax this page to (613) 952-1394.

1. Data fitting demonstration.

This session will cover examples of data fitting to geometrical elements like line, circle, cylinder, etc.

Dr. Allan D. Spence, Department of Mechanical Engineering, McMaster University, Hamilton, Ontario.

2. Practical session on CMM calibration using ball-bars and laser interferometers.

The session will involve real time measurements on a CMM.

Mr. Nael Barakat, Department of Mechanical Engineering, McMaster University, Hamilton, Ontario.

3. The selection of candidate datum reference frame: An example of location tolerance with datum features subject to size variation and specified at MMC.

The document ASME Y14.5.1, entitled "Mathematical Definition of Dimensioning and Tolerancing Principles" enables a much clearer understanding of GD&T particularly in the context of CMM inspection. The presentation will review the theory relevant to location and datum referencing followed by a detailed example.

Prof. René Mayer, École Polytechnique, Montréal, Québec

4. Case Studies.

Examples of measurement problems involving CMMs will be discussed. User/participant problems are welcomed.

Mr. Kostadin Doytchinov, NRC/Institute for National Measurement Standards

5. Y14.5, Actual Value Definitions for Process Control Feedback

This session provides CMM programmers, operators, and QC personnel with fresh insights into actual value processing and the difference between fundamental Y14.5 variables and the information actually required for manufacturing process control.

Bill Tandler, Multi Metrics, Inc.

6. Sheet Metal/Fixtures

Examples of sheet metal programming techniques and fixture applications, and discussion of problems encountered with spring back, GD&T applications, and repeatability.

Bill Vetzal, General Motors Canada

Tony DeViveiros, General Motors Canada

HOPING FOR MORE STANDARDIZATION IN CMM SOFTWARE?

The U.S. DMIS National Standards Committee has struck a subcommittee to draft a new, Object Oriented Technology specification of DMIS (Dimensional Measurement Interface Standard) as a basis for a new ANSI National Standard for inspection software communications.

The DMIS Object Technology (DOT) specification was developed by Object Workshops, Inc. (Wytheville, VA) and has been transferred to CAM-I (Consortium for Advanced Manufacturing-International), which owns and sponsors the DMIS standard.

Widespread adoption of the DOT initiative will lead to a plug-and-play environment for inspection equipment, where the customer will have a wider choice of special purpose inspection packages that can be added to the base machine control and inspection software.

Development of the DOT specification is a project that has been identified for potential collaboration in a new, joint effort between CAM-I and NIST, the U.S. National Institute of Standards and Technology. A workshop on this new collaboration was held at NIST February 23-25, 1998. Canadians will be involved in the project through development of a DOT CMM platform at McMaster University. Details will be presented at the 4-5 June 1998 ACMC Annual Meeting.

Allan D. Spence, Assistant Professor,
Mechanical Engineering
McMaster University,
Hamilton, Ontario, Canada L8S 4L7

tel. (905) 525-9140
fax (905) 572-7944

ACMC INFORMATION

Kostadin Doytchinov—ACMC Secretary
Institute for National Measurement Standards
National Research Council Canada
Montreal Road, Building M-36
Ottawa, Canada, K1A 0R6

Telephone: (613) 991-0265
Fax: (613) 952-1394
E-mail: kostadin.doytchinov@nrc.ca

NAME _____

COMPANY/ORGANIZATION _____