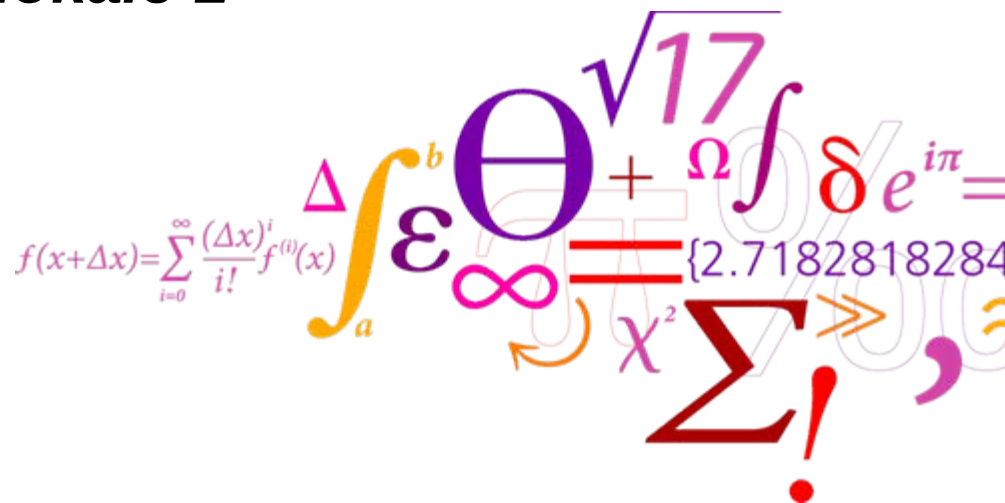


”Industriel anvendelse af CT scanning”

” Application of CT scanning in industry”

DTU, bygning 101, mødelokale 1
8. juni 2010



"Industriell anvendelse af CT scanning"

"Application of CT scanning in industry"

DTU, bygning 101, mødelokale 1
8. juni 2010

DTU Mekanik
Institut for Mekanisk Teknologi

$$f(x+\Delta x) = \sum_{n=0}^{\infty} \frac{(\Delta x)^n}{n!} f^{(n)}(x) = \int_{-\infty}^{\infty} \epsilon \Theta_{\infty}^{v17} \delta e^{in} = (2.7182818284) \chi^2 \Sigma!$$

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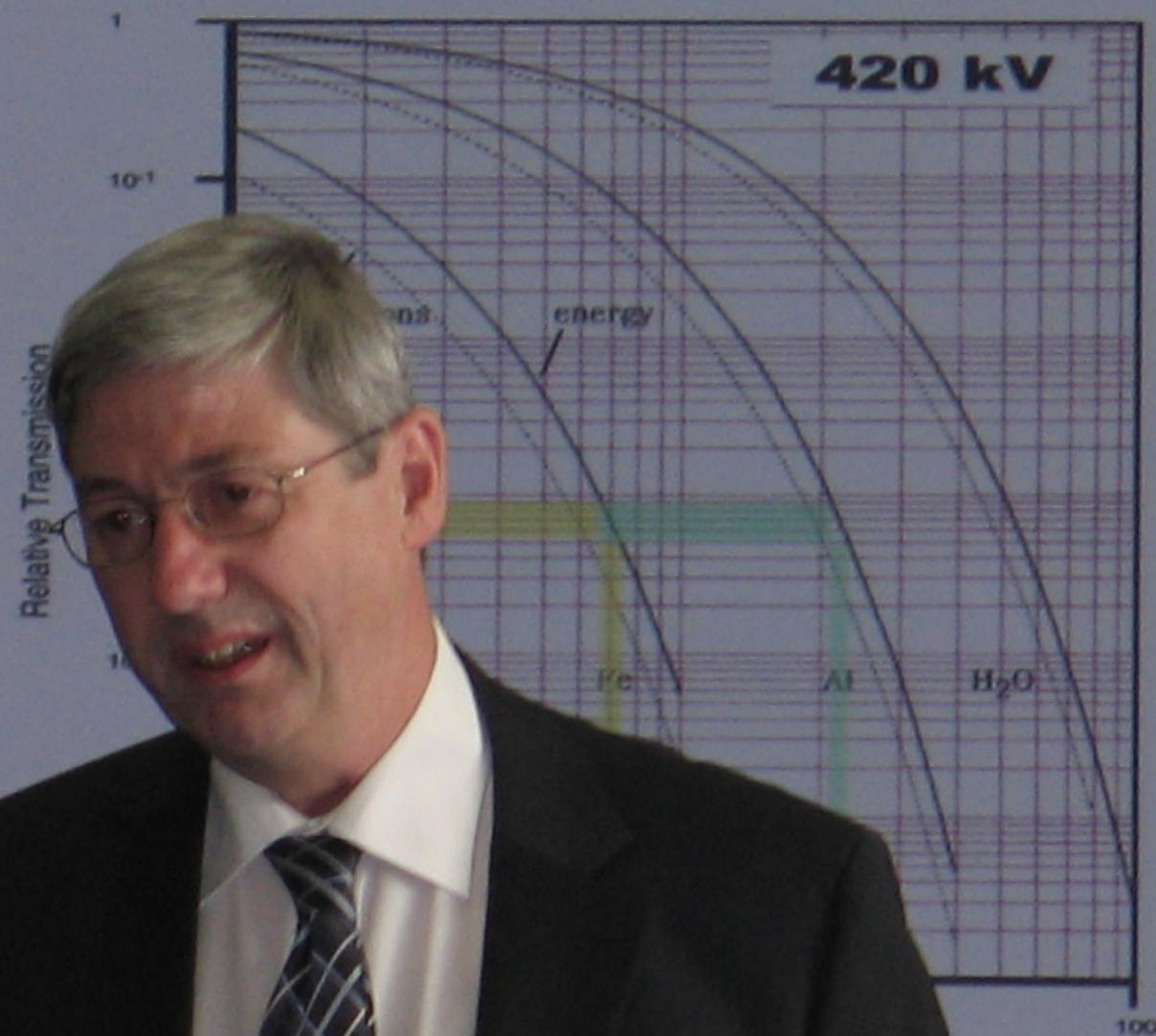
DTU, bygning 101, mødelokale 1
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Maximum allowable material penetration



- Maximum penetration at 420 keV:
 - 70 mm Fe
 - 200 mm Al

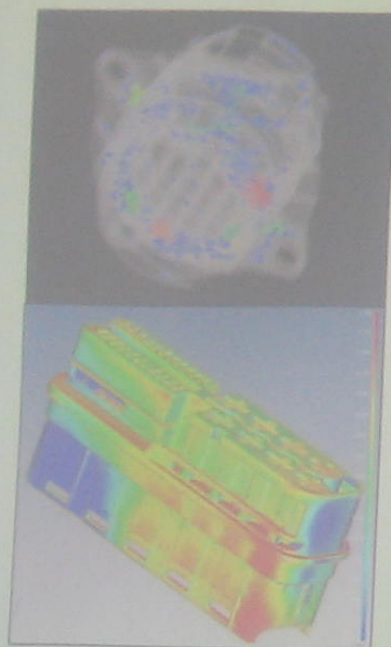
Introduction: CT for Metrology



Computed Tomography acquires data of:
→ all surfaces and
→ the entire volume of an object

Metrotomografie®

The new dimension in Industrial Metrology:
• measurement of all features,
• measurement of complex parts and structures,
• test and defect control, manually and automated
• non-destructively, quick and easy

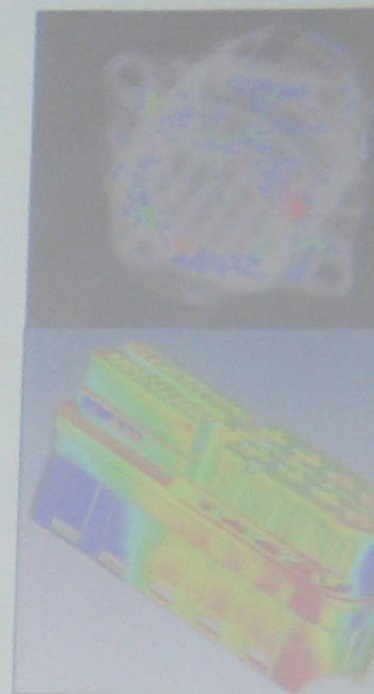


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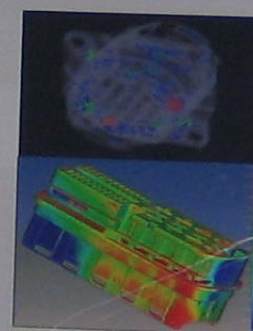
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of traditional CMM



"Industriel anvendelse af CT scanning"

• Zeiss-CT used for calibration of traditional CMM strategy in measurement plans.

"Industri"

3D-CT

CT-scanning of industrial components:

- Process phases: 3D-CT scanner.
- GCS, agreement on standards.
- Zeiss-CT versus other methods.
- Zeiss-CT used for calibration of traditional CMM strategy in measurement plans.

DuraMax

DTU

"Industriel anvendelse af CT scanning"

A photograph of a Zeiss 3D-CT scanner, which is a large, industrial-grade machine used for non-destructive testing. Next to it is the DuraMax logo, which features a stylized green and blue graphic.





Analyse

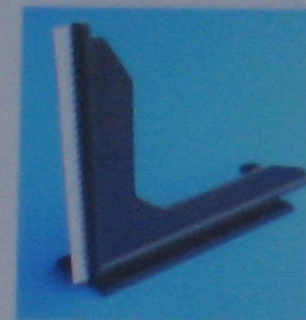
zebico



Reference artefacts for optical scanners



1) Ball bar
(source: E. Trapet)



2) L shape ball bar
(source: E. Trapet)



3) Ceramic gauge blocks
(source: Mitutoyo)



4) Tetraedron
(source: E. Trapet)

Conference on "Application of CT scanning in industry"

Angela Cantatore

DTU 08/06/2010



Objectives

Main objectives of the 'CT Audit' Project:

- to deepen the knowledge on CT dimensional metrology;
- to spread information on available reference geometrical standards and procedures for testing CT systems;
- to compare different CT measuring systems;
- to evaluate and compare participants' measurements and uncertainty evaluation methods;
- to identify causes of errors;
- to establish an international network of laboratories using CT systems for dimensional metrology.



DTU Termiologi, June 2010

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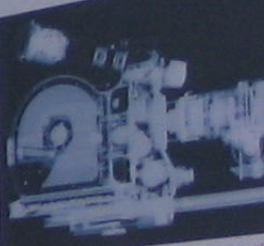


DTU Termiologi, June 2010

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DTU Termiologi

to establish a network of laboratories for dimensional metrology

University of Padova
Simone Carminato

'CT Audit' interlaboratory comparison on CT systems for dimensional metrology



InnospeXion – presentation
 X-ray physics
 What is low energy X-rays ?
 What facilitates low-energy usage industrially ?
 What does low-energy X-ray offer ?
 Application examples:
 -Natural materials, sealings, food products, packaged assemblies, packaging materials, low-density materials
 Image processing of X-ray images – critical issues
 Performance considerations

InnospeXion
 Innovative X-ray Solutions
www.innospeXion.dk

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Presentation Overview

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Lars Bager Christensen

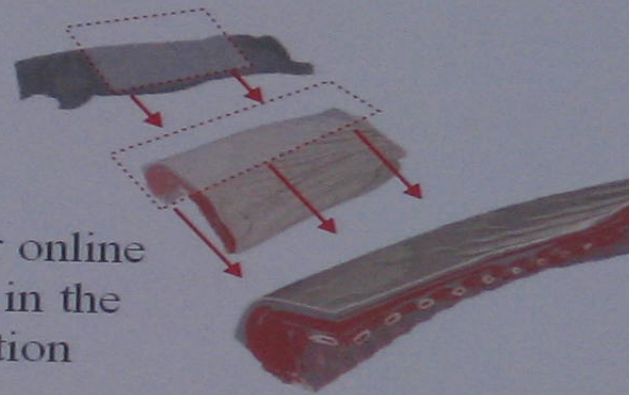


CIA-CT Temadag



TEKNOLOGISK
INSTITUT

CT scanning for online
quality control in the
meat production



Lars Bager Christensen

Benetton

Deformalyze

- Specialize in the analysis of CT and X-Ray data
- Consultancy - Analysis and Software solution
- Background in mathematical image analysis
- Deformalyze

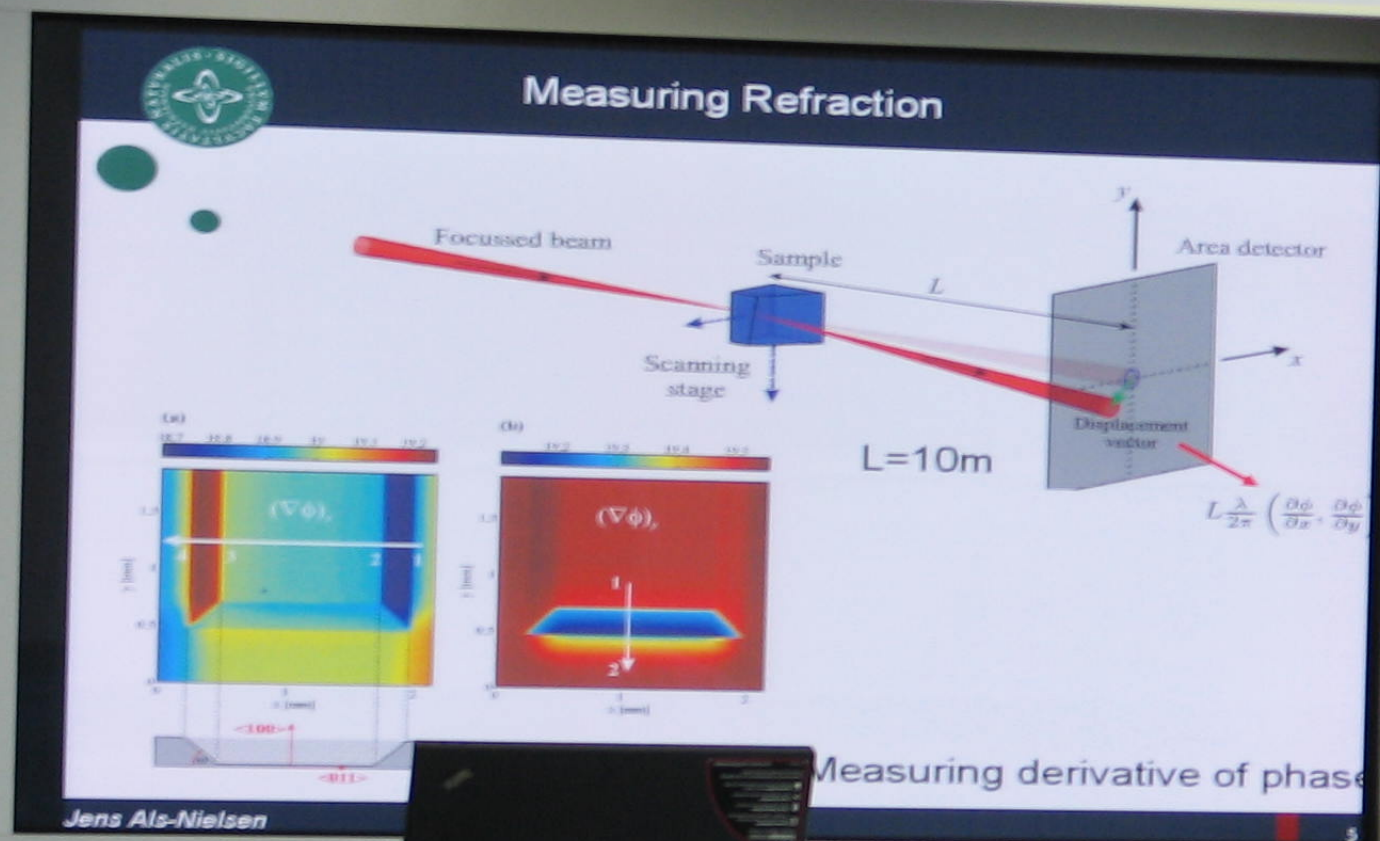
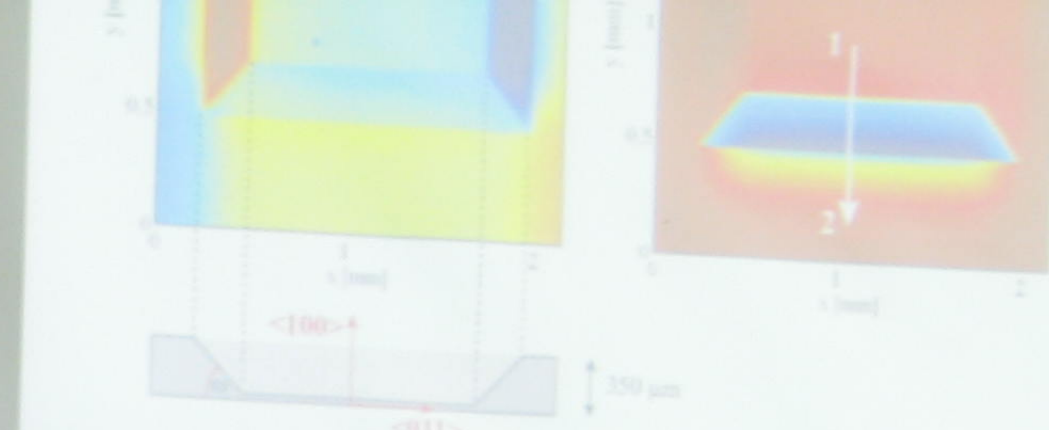


ve of phase

5

Jens Als-Nielsen

Measuring



CT Scanning Using Synchrotron Sources

Erik M. Lauridsen

Centre for Fundamental Research: Metal Structures in 4D, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Denmark

Funding:

**DANMARKS
GRUNDFORSKNINGSFOND**
DANISH NATIONAL RESEARCH FOUNDATION

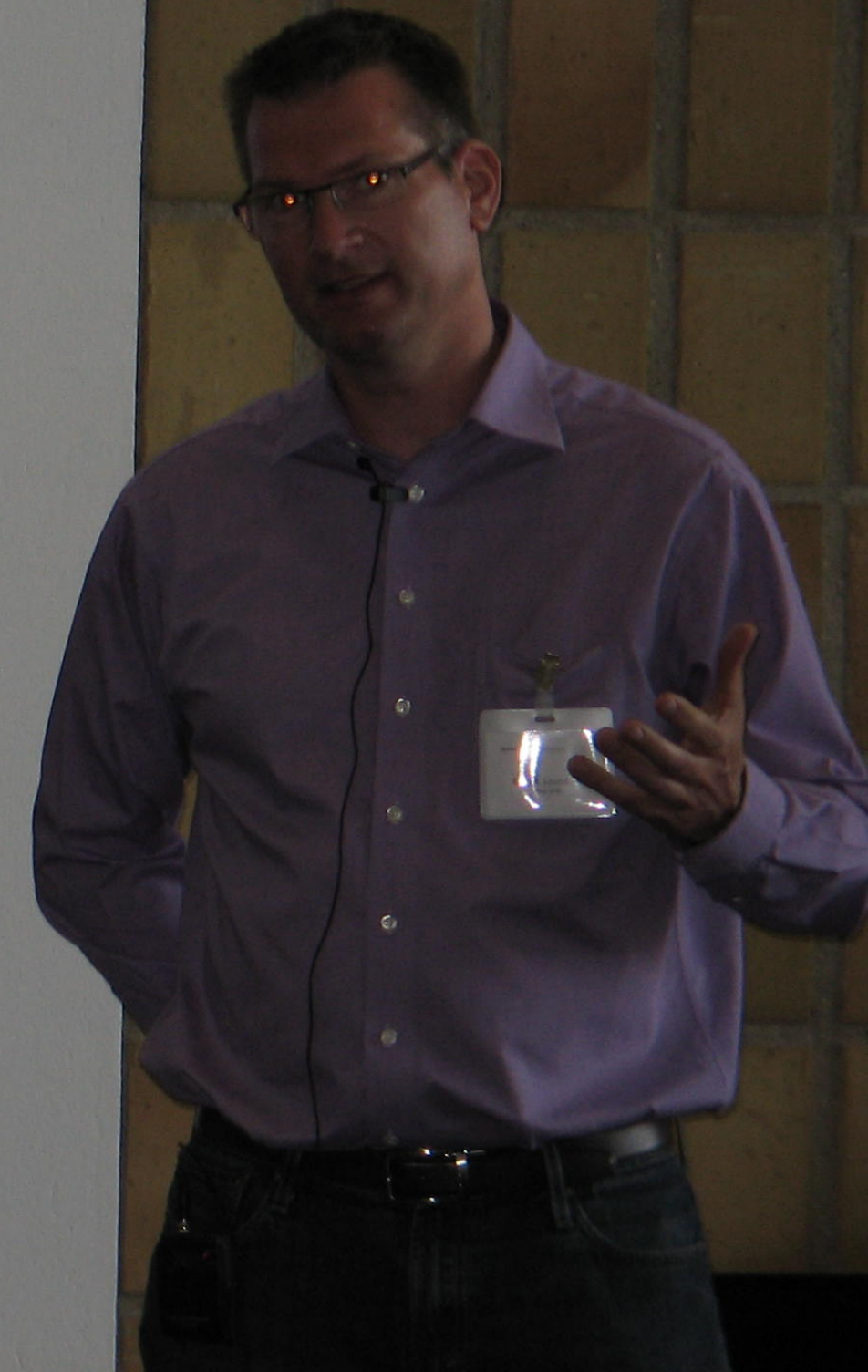
Risø DTU

National Laboratory for Sustainable Energy



$$f(x+\Delta x) = \sum_{i=0}^{\infty} \frac{(\Delta x)^i}{i!} f^{(i)}(x)$$

A collage of mathematical symbols including $\int_a^b$, ϵ , Θ , $\sqrt{17}$, Ω , $\delta e^{i\pi}$, ∞ , χ^2 , Σ , and $!$.



Centre for Industrial Application of CT scanning (CIA-CT)

Project dissemination



- Contact data base
- Half yearly newsletter (May & November)
- Leaflets
- Posters

• Web page:
www.cia-ct.mek.dtu.dk

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