

Wissenschaftliche Mitteilungen

aus dem
Institut für Meteorologie der Universität Leipzig



ISBN 3-9807315-2-9

International Workshop Tomography and Acoustics: Recent developments and methods

06. - 07.03. 2001 in LEIPZIG

Hrsg.: K. Arnold, A. Ziemann,
G. Tetzlaff, V. Mellert und A. Raabe

Leipzig 2001

Band 23



International Workshop

**Tomography and Acoustics:
Recent developments
and methods**

6 - 7 March 2001

University of Leipzig
LIM - Institute for Meteorology
Germany

Scientific Organising Committee:

V. Mellert, University of Oldenburg
G. Tetzlaff, University of Leipzig
A. Raabe, University of Leipzig

Local organisers:

A. Ziemann, University of Leipzig
K. Arnold, University of Leipzig

Program International Workshop

Tomography and Acoustics: Recent developments and methods

06. March 2001, Tuesday

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9:30	A. Tolstoy Geoacoustic 3-D tomography	8
9:50	M. Taroudakis and M. Markaki Tomographic inversions in shallow water using modal travel time measurements	12
10:10	E. Skarsoulis Matched-peak inversion in travel-time tomography	15
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11:00	R. Chapman, V. Corre and P. Pignot Vertical slice matched field tomography	16
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11:40	A. Blum, A. Leiser, I. Flammer, P. Germann Acoustic determination of water distribution in unsaturated soils	29
12:00	M.N. Rychagov and S.A. Tereshchenko Reconstruction of the flow velocity profile with multipath ultrasonic measuring spoolpieces	33
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15:30	N.A. Kampanis and E.T. Flouri A PE-based, finite element numerical model for aeroacoustics over irregular terrain	62
15:50	V.E. Ostashev and D.K. Wilson Line-of-sight sound propagation through anisotropic and inhomogeneous atmospheric turbulence	63
16:10	S.Kulichkov, I. Chunchuzov, A.Otrezov and V.Tovchigrechko On the reflection of acoustic pulses from anisotropic wind speed and temperature inhomogeneities in the atmospheric boundary layer	71
16:30	P. Voisin and P. Blanc-Benon The influence of meteorological conditions for the localization of an acoustic source by means of a microphone antenna. (Poster)	79
16:35	G. Fischer, P. Holstein, R. Müller and J. Reins Zoom-FFT and its application (Poster)	88
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07. March 2001, Wednesday

Session 3: *Application to the Atmosphere* (D.K. Wilson, U.S. Army Res. Lab., USA)

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11:20	A. Ziemann, K. Arnold and A. Raabe Acoustic tomography as a method to identify small-scale land surface characteristics	130
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14:00	D. Kindler and U. Send Integral effects of open ocean deep convection in the central Labrador Sea – Investigated by ocean acoustic tomography	163
14:20	U. Send and E. Skarsoulis Analysis of tomography data from the THETIS-2 experiment	164
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University of Leipzig

Measurements are the experimental tool that allows to identify processes and they thus form the basis of the understanding of these processes. However, the times when simple instruments and similarly simple experimental setups provided scientific breakthroughs are gone by.

Nowadays the experiments do need most refined approaches and in many cases a piece of information on a process cannot be retrieved from measured data without a very sophisticated processing. It is in particular that complex spatial structures do require such methods. In many cases the complexity of the structures is such that it is not even possible to retrieve absolute quantities from measurements, but merely relative information on the spatial structure. For many applications this already means a wealth of information that beforehand could by no means be made available. To open the access to the measurements of otherwise inaccessible complex matter is the basic motivation to apply tomographic methods allowing to develop new synoptic views.

Therefore, this workshop should bring scientists from different disciplines together to make them exchange their ways of how to tackle complexly distributed parameters hidden the investigated medium they each do study in their own research areas. If after the workshop the participants return home with the impression to have heard and seen something new for them, the goal of the organisers is achieved.

We would like to take this opportunity to acknowledge the friendly support of the German Research Association (Deutsche Forschungsgemeinschaft) and the Saxon Ministry of Science and Art (Sächsisches Staatsministerium für Wissenschaft und Kunst) as well as Sinus-Meßtechnik GmbH (Leipzig), METEK GmbH (Elmshorn) and Scintec AG (Tübingen).

Furthermore, we wish to express particular thanks and gratitude to the participants who contributed to this Workshop. The Workshop has many impressive papers to be presented, representing the actual developments in tomography, acoustics, or together in both disciplines. The interaction between all participants will amount to the special value of this meeting. With this in mind we wish all delegates an active exchange of ideas, many new personal contacts as well as the refreshing of existing connections, and last but not least a pleasant stay in the University and Fair City Leipzig.

Scientific Organising Committee

Gerd Tetzlaff (Leipzig), Volker Mellert (Oldenburg) and Armin Raabe (Leipzig)

Local Organising Committee

Astrid Ziemann and Klaus Arnold (Leipzig)

