

3-rd SPRING SCHOOL ON ACOUSTO-OPTICS AND APPLICATIONS Gdańsk — Wieżyca, May 29-31, 1986

The 3-rd School on Acousto-optics and Applications like the two previous ones (in 1980 — Arch. Acoust. 6 (1981) 85–86 and in 1983 — Arch. Acoust. 9 (1984) 382–382) took place at Wieżyca near Gdańsk in the recreation centre of the Gdynia Shipyard. The School was organized by the Institute of Experimental Physics, University of Gdańsk in cooperation with the Section of Quantum and Molecular Acoustics of the Polish Acoustical Society and with support by the Institute of Fundamental Technological Research, Polish Academy of Sciences.

The Scientific Committee of the School included Prof. Dr. I. MAŁECKI — the Member of the Polish Academy of Sciences; Prof. Dr. A. OPILSKI Silesian Technical University Gliwice; Prof. Dr. K. PATORSKI Technical University, Warszawa; Prof. Dr. J. RANACHOWSKI, Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw.

The Organizing Committee included Prof. Dr. A. ŚLIWIŃSKI, Chairman; Dr. A. MARKIEWICZ, Secretary; Dr. I. WOJCIECHOWSKA, Deputy Secretary; and Drs M. BORYSEWICZ, M. KOSMOL, P. KWIEK, B. LINDE as members.

In the working international meeting specialists of few domains covering physical, technical and technological aspects of acousto-optics took part. There were 55 participants among them 10 from abroad. 8 invited lectures and 19 original papers were read. Also, 2 round table discussions were organized. The meeting was valuable and the programme was rich, although it was a bit reduced comparing to the planned one (34 presentations) because 7 guests from abroad recalled their participation at the last moment.

The realized programme of the School was following:

Invited lectures:

1. W. G. MAYER T. H. NEIGHBORS (Georgetown University, USA), *Acousto-optic interactions produced by pulsed ultrasound.*
2. P. KWIEK (University of Gdańsk, Poland), *Light diffraction on two spatially separated ultrasonic waves.*
3. D. A. HUTCHINS, K. LONDGREN (Queen's University, Kingston, Canada), *Optical penetration and detection of ultrasonic pulses in solids.*
4. W. H. JONES (Technical University of Nova Scotia, Halifax, Canada), *Reconstruction of phase and amplitude tomograms in media with significant acoustic refraction.*
5. R. REIBOLD (Physikalisch — Technische Bundesanstalt, Braunschweig, FRG), *Light diffraction tomography, a powerful tool for ultrasonic field investigations.*
6. J. SAPIREL (Centre National d'Etudes de Telecommunications, France), *Acoustic and acousto-optic properties of layered media and superlattice.*
7. A. ŚLIWIŃSKI (University of Gdańsk, Gdańsk, Poland), *Light and ultrasonic interaction in optically and acoustically active media.*
8. J. MOTYLEWSKI, J. RANACHOWSKI (Institute of Fundamental Technological Research

of Polish Academy of Sciences), M. RZESZOTARSKA (Technical University of Warsaw), Warsaw, Poland, *Photoacoustic cells for gases liquids investigations.*

Oral papers and communications:

1. L. JAKAB, P. RICHTER (Technical University of Budapest, Hungary), *Spectrum analyzer with acousto-optic Bragg cell.*
2. A. MARKIEWICZ (University of Gdańsk, Gdańsk, Poland), *Some numerical results for light-diffraction on ultrasonic pulses.*
3. J. KOZŁOWSKI (Technical University of Warsaw, Poland), *Experimental investigations of TeO_2 acousto-optic filter at 0.6–0.9 μm spectral range.*
4. B. HAŁACIŃSKI, A. LATUSZEK (Technical University of Warsaw, Poland), *Acousto-optical method of velocity measurements by means of convergent SAWs on arbitrary surfaces of solids in reflected light.*
5. J. KOZŁOWSKI, A. LATUSZEK (Technical University of Warsaw, Poland), *Investigation of the bulk waves produced by means of the interdigital transducer immersed in liquid.*
6. M. BASZUN, A. MILEWSKI, J. SAMUŁA (Technical University of Warsaw, Poland) *Photo-acoustically controlled variable SAW phase shifter.*
7. R. BUKOWSKI (Silesian Technical University, Gliwice, Poland), *Non-stationary stimulated acousto-optical interaction in solid dielectrics.*
8. Z. CHOJNACKI, E. KOTLICKA, A. DOMAŃSKI (Technical University of Warsaw, Poland), *Three-positional acoustooptic switch on SAW in LiNbO_3 .*
9. Z. NIECHODA (Technical University of Warsaw, Poland), *Thermal phenomena in acousto-optic devices.*
10. J. ZIENIUK (Institute of Fundamental Technological Research of Polish Academy of Sciences, Warsaw, Poland), *An acoustical optics of the ultrasonic microscope.*
11. J. LITNIEWSKI (Institute of Fundamental Technological Research of Polish Academy of Sciences, Warsaw, Poland), *The quality of images and measurements obtained with acoustic microscope.*
12. H. J. HEIN, F. TISCHKA, R. MILLNER (Martin Luther University, Halle, NRD), *Remarks on the receive operating characteristics of medical diagnostic system — some results of B-scan visual system.*
13. E. SOCZKIEWICZ (Silesian Technical University, Gliwice, Poland), *Calculation of ultrasonic waves scattering in the region of the critical mixing point of binary liquids.*

Poster form papers:

1. I. B. ESIPOV (Institute of Radiophysics and Radioelectronics A.N. USSR, Moskwa), *Effects of acousto-optics interaction on a rough surface.*
2. A. OPILSKI, Z. OPILSKI, R. ROGOZIŃSKI (Silesian Technical University, Gliwice, Poland), *Technology of producing gradient lenses for acousto-optics.*
3. J. BERDOWSKI (Silesian Technical University, Gliwice, Poland), *The influence of geometry interaction on the light diffraction by SAW in the crystals ADP type.*
4. J. SZURKOWSKI (Technical University of Poznań, Poland) and A. TESSIER, R. M. LEBLANC (Université de Québec, Troisviviér, Canada) *Mirage effect.*
5. M. SOWIŃSKI, T. JABŁOŃSKI (Institute of Fundamental Technological Research of Polish Academy of Sciences, Warsaw, Poland), *Propagation analysis of doublecore optical fibers.*
6. J. JABŁOŃSKI (Institute of Fundamental Technological Research of Polish Academy of Sciences, Warsaw, Poland), *Computation of fundamental modes in fibers with cross sectional shape.*

Round table discussions:

1. *Light and ultrasonic pulses interaction.*
2. *Possibilities of acousto-optics in material examination.*

The sessions involved numerous debates, in addition the two programmatic round table discussions above mentioned.

The discussion on light and ultrasonic pulses interaction indicated that the subject has come at the top not only in acousto-optics but in many other domains of physics and technology where the diffraction problems in a case of non-stationary processes are not common ones. Mutual relations between the Fourier spectrum (in the frequency domain) and transients, mainly in the near field of ultrasonic transducers, the analysis of pulses in the time domain, the distribution of amplitudes and phases of non-stationary processes those are only some of the problems brought up in the discussion. The moderator of the discussion was Professor W. G. MAYER (Georgetown University, USA) and following persons participated: D. A. HUTCHINS (Queen's University, Canada), L. JAKAB (Technical University of Budapest, Hungary), T. JABŁOŃSKI (Institute of Fundamental Technological Research Polish Academy of Sciences, Warsaw), E. KOZACZKA (Navy High School, Gdynia), H. LASOTA (Technical University, Gdańsk), A. MARKIEWICZ (University of Gdańsk), R. REIBOLD (Phys. Techn. Bundesanstalt, Braunschweig, Germany), A. ŚLIWIŃSKI (University of Gdańsk), P. VOSS (University of Copenhagen, Denmark).

The discussion on the possibilities of applying acousto-optics in material examination was moderated by Professor H. G. JONES (Technical University, Halifax, Canada). In the discussion participated: R. BUKOWSKI (Silesian Technical University, Gliwice), A. GIERUS and A. SOKOLOVSKIY (Institute of Radiophysics and Radioelectronics of USSR Academy of Sciences Moskva), L. JAKAB (Technical University of Budapest, Hungary), E. KOTLIČKA and A. LATUSZEK (Technical University of Warsaw), J. KOZŁOWSKI (Technical University of Warsaw), A. MARKIEWICZ (University of Gdańsk), W. G. MAYER (Georgetown University, USA), J. MOTYLEWSKI (Inst. of Fundamental Technological Research PAN, Warsaw), Z. NIECHODA (Technical University, Warsaw), J. SAPIEL (CNET, Paris France), A. ŚLIWIŃSKI and I. WOJCIECHOWSKA (University of Gdańsk). Deliberations took place on what the acousto-optics does present itself and what it should be; what is its scientific future as a separate domain and which are will be its applications.

The matters of using acousto-optical methods for velocity and attenuation of ultrasonic and hypersound waves measurements, determination of elastic constants (in linear as well as in nonlinear cases) of light transparent media were widely discussed. Acoustooptical properties of crystals and ceramic materials are important for their application in integrated optical systems, in fibreoptics and optoelectronics. The acousto-optical interaction of elastic waves of all types are utilized, particularly the surface waves.

It was stated, that the 3-rd School, similarly as the previous ones included photoacoustic topics into the programme. Although it involves problems of inverse phenomena towards acousto-optic ones, so, however there takes place interaction between the same kinds of waves. Particularly, in material examinations the methods based on photoacoustic phenomena are very useful and they fastly develop. Attention was paid for applying optical holography for detection and measuring of vibrations and ultrasonic fields as processes in real time and averaged ones. Perspectives of construction of acousto-optical deflectors, modulators and filters were discussed, too.

In opinion of the participants the meeting was useful and fruitful.

The organizers provided opportunity for the excursion to visit Three-town, particularly monuments in Gdańsk.

The Proceedings of the 3-rd School will be published in a compact form at the end of 1986.

The next 4-th Spring School on Acousto-optics and Applications was proposed to be organized in May 1989.

A. Śliwiński

ANNOUNCEMENT

Istituto di Acustica „O. M. Corbino”, 50th anniversary celebration, Rome, Italy, 28-30 april 1987.

The "Istituto di Acustica O. M. Corbino" of the Italian National Research Council will celebrate its Fiftieth Anniversary of activity with a 3 days meeting (28-30 april 1987) in Rome, Italy. Several invited speakers will review the state of the art and future trends of different topics in Acoustics. A tentative list of subjects includes Ultrasonics, Quantum Acoustics, Noise, Architectural Acoustics, Acoustic Signal Processing Speech and Transduction. A Symposium on the work of O. M. Corbino founder of the Institute, will be organized on the first day jointly with the Department of Physics of the University of Roma. For further information please contact Dr. P. E. Giua, Director, Istituto di Acustica Via Cassia 1216 00189 Roma, Italy; tel. +6 - 3765757 -

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