

## 1ST SPRING SCHOOL OF ACOUSTO-OPTICS AND ITS APPLICATIONS

Gdańsk-Wieżyca 26-30 May 1980

The School was organized by the Institute of Physics of the University of Gdańsk and the Sections of Quantum and Molecular Acoustics and Sonochemistry of Polish Acoustical Society and supported by the Institute of Fundamental Technological Research of the Polish Academy of Sciences. The Honorary Committee consisted of Prof. Dr. Ignacy MAŁECKI, Prof. Dr. Halina RYFFERT, Prof. Dr. Janusz SOKOŁOWSKI. The Organizing Committee consisted of Prof. Dr. Antoni ŚLIWIŃSKI, Prof. Dr. Aleksander OPILSKI, Prof. Dr. Jerzy RANACHOWSKI, Dr. Anna MARKIEWICZ and Maria BORYSEWICZ, M. Sc., Dr. Iwona WOJCIECHOWSKA, Dr. Marek KOSMAL, Dr. Piotr KWIEK and Dr. Bogumił LINDE.

The School had an international character both in terms of experts invited (9 from abroad and 7 from Poland) and participants (5 from abroad and 51 from Poland). 72 scientists took part in the school. In addition to 22 lectures there were also 15 poster form presentations.

The aim of the School was to survey the developments and enlighten the participants in the field of the physical problems of interaction between light and sound (mainly over the ultra- and hypersonic ranges) in liquids and solids. The acousto-optic phenomena have been known to physicists for several scores of years but it is in the recent decade that this field has seen veritable development. A good many original applications in the acousto-optic processors have appeared, e.g. ultrasonic deflectors of light beams, modulators, filters and so on, which are used in the integrated optics, ultrasonic visualization (also holography), signal analysis, spectroscopy etc.

The yearly developments in acoustooptics indicate that this is an integral and promising field, which made the idea of an international meeting of experts i.e. the School, which would have a workshop character, so much worthwhile.

The School appeared to be very useful both to the mind of the participants and organizers, therefore they welcomed the idea of such Schools every second year.

The School consisted of:

## General papers

- A. BRAZEALE, *Bragg imaging of finite amplitude ultrasonic waves.*
- R. MERTENS, *Some recent developments in the theory of diffraction of light by an ultrasonic wave: 1. The wave equation — its establishment — its approximation. 2. Methods of solution. 3. Diffraction of laser light by ultrasonics.*
- R. STEPHENS, *The photoacoustic effect.*
- A. ZAREMBOWITCH, *Bragg diffraction of light by ultrasonic waves, a specific tool for solid state investigations.*

- J. K. ZIENIUK, J. LITNIEWSKI, *On the influence of coherence and wave-length on ultrasonic images.*
- J. C. SOMER, *Application of an acousto-optic device in an optical deconvolver for blurred ultrasound — diagnostic images.*
- A. OPILSKI, *Acousto-optical methods of solid state investigations.*
- Z. KLESZCZEWSKI, *Nonlinear acousto-optic interaction.*
- M. SZUSTAKOWSKI, *Acousto-optical devices of signal processing.*
- R. REIBOLD, *Double exposure holography: its application to intensity measurements of arbitrarily shaped ultrasonic fields.*
- M. SZUSTAKOWSKI, *Acousto-optic devices for laser beam control.*
- I. MAŁECKI, J. RANACHOWSKI, *Propagation of ultrasonic waves in nonhomogeneous media as in piezoelectric ceramics used in acousto-optics.*
- A. ŚLIWIŃSKI, *Recent results on the experimental verification of the Leroy's theory of diffraction of light by two adjacent ultrasonic beams.*
- A. ŚLIWIŃSKI, *Optical holography and acousto-optics.*
- I. GABRIELI, *Spatial and temporal light modulation by ultrasound: theory and experiments.*
- A. ALIPPI, *SAW — acousto-optics.*
- W. PAJEWSKI, *Piezoelectric and elasto-optic properties of crystals.*
- A. DEFEBVRE, *Theoretical and experimental study of SAW propagation velocity in layered media.*
- L. PIMONOW, *Intercellular information and ultrasonics.*
- D. WATMOUGH, *An investigation by telemicroscopy and electron microscopy of the biological effects of ultrasound with a view to damaging malignant tumours.*

#### Poster form papers

- H. J. HEIN, *The importance of the threshold contrast for acoustical imaging.*
- P. KWIEK, A. MARKIEWICZ, A. ŚLIWIŃSKI, *An optical holography with a reference beam of the cosinusoidally modulated amplitude used for investigation of ultrasonic fields.*
- I. WOJCIECHOWSKA, *Application of optical holography to determination of amplitude distribution throughout ultrasonic transducers.*
- P. KWIEK, A. MARKIEWICZ, A. ŚLIWIŃSKI, *Experimental verification of light diffraction by two ultrasonic beams.*
- M. KOSMOL, *Diffraction of high intensity laser beam by ultrasonic wave.*
- J. BERDOWSKI, *Diffraction of laser light by SAW.*
- B. ŚWIETLIŃSKI, *Calculations of acousto-optic interactions in the  $\text{LiNbO}_3$  planar diffusion waveguide.*
- H. KUSEK, *Acoustical signals recorded under strain.*
- P. HAUPTMANN, R. SAUBERLICH, S. WARTEWIG, *Acoustic relaxation spectroscopy on polymer solutions.*

In addition to numerous discussions accompanying all the lectures and poster form sessions there also was a separate round table discussion, which showed a considerable topicality of the issues presented at the meeting and also mapped out the prospective directions of acoustooptic research, including the acousto-optic interaction in solids, Bragg's diffraction, light diffraction by two ultrasonic beams, applications of optic holography in ultrasonic visualization, application of acoustooptic processors in telecommunication signal processing etc.

The proceedings of the School were published by the end of 1980.

Antoni Śliwiński (Gdańsk)