

**Pidstryhach Institute of Applied Problems of Mechanics and
Mathematics, NASU, Ukraine**

Tbilisi State University, Georgia

IEEE MTT/ED/AP/CPMT/SSC West Ukraine Chapter

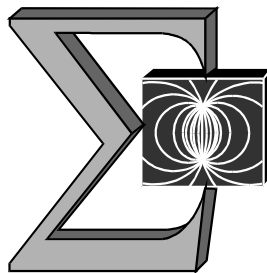
IEEE MTT/ED/AP/EMC Republic of Georgia Chapter

DIPED - 2005

**Xth International Seminar/Workshop on
DIRECT AND INVERSE PROBLEMS
OF ELECTROMAGNETIC AND
ACOUSTIC WAVE THEORY**

Lviv, September 12-15, 2005

PROGRAM



Lviv 2005

DIPED-2005 ORGANIZING COMMITTEE

Co-Chairman*Prof. N. N. Voitovich*

Inst. of Appl. Probl. of Mech. and Math., NASU
 3"Б" Naukova St., Lviv, 79601, Ukraine
 Tel: +380 322 651944; Fax: +380 322 637088
 E-mail: voi@iapmm.lviv.ua

Co-Chairman*Prof. R. S. Zaridze*

Tbilisi State University
 3 Chavchavadze Ave., Tbilisi, 380028, Georgia
 Tel: +995 32 290845; Fax: +995 32 290821
 E-mail: rzaridze@lae.icts.tsu.edu.ge

Secretary*Dr. M. I. Andriychuk*

Inst. of Appl. Probl. of Mech. and Math., NASU
 E-mail: andr@iapmm.lviv.ua

Members

O. V. Kysyi,
O. O. Reshniak

Inst. of Appl. Probl. of Mech. and Math., NASU
 E-mail: okusii@iapmm.lviv.ua,

DIPED-2005 PROGRAM COMMITTEE

Co-Chairman*Prof. N. N. Voitovich*

Inst. of Appl. Probl. of Mech. and Math., NASU

Co-Chairman*Prof. R. S. Zaridze*

Tbilisi State University

Secretary*Dr. O. F. Zamorska*

Inst. of Appl. Probl. of Mech. and Math., NASU
 E-mail: zam@iapmm.lviv.ua

Members*Prof. Z. T. Nazarchuk*

Physico-Mechanical Institute, NASU
 E-mail: nazarch@ipm.lviv.ua

Prof. S. L. Prosvirnin

Institute of Radioastronomy, NASU
 E-mail: prosvirnin@rian.kharkov.ua

Dr. D. D. Karkashadze

Tbilisi State University
 E-mail: David.Karkashadze@lae.icts.tsu.edu.ge

Dr. D. B. Kuryliak

Physico-Mechanical Institute, NASU,
 E-mail: kuryliak@ipm.lviv.ua

Dr. Ye. M. Yashchyshyn

Warsaw University of Technology
 Institute of Radioelectronics
 E-mail: jaszcz@ire.pw.edu.pl

DIPED-2005 ORGANIZING COMMITTEE WELCOME

On behalf of both the IEEE MTT/ED/AP/CPMT/SSC West Ukraine and MTT/ED/AP/EMC Republic of Georgia Chapters, we are delighted with the opportunity to welcome you to the Xth International Seminar/Workshop on Direct and Inverse Problems of Electromagnetic and Acoustic Wave Theory (DIPED-2005). The seminar will be held on September 12-15, at the Pidstryhach Institute of Applied Problems of Mechanics and Mathematics, NASU, Lviv, Ukraine.

The DIPED Seminar work started in 1982 as a form of scientific cooperation between the Institute of Radioengineering and Electronics, Academy of Sciences of USSR (Moscow), Tbilisi State University, Tbilisi, Georgia, and Institute of Applied Problems of Mechanics and Mathematics, Lviv, Ukraine. Its initiator and permanent leader is Prof. B. Z. Katsenelenbaum. Until 1990 it was held annually in Lviv and Tbilisi and it assembled the scientists and engineers from various cities of FSU (Moscow, Tbilisi, Lviv, Kharkiv, Chelyabinsk, Novosibirsk, Saint Petersburg, etc.).

At the beginning of 90s the work of the DIPED was temporary interrupted for the non-scientific reasons. Thanks to the technical and financial support of the IEEE the Seminar was renewed in 1995 as the annual joint Seminar/Workshop of both the MTT/ED/AP/CPMT/SSC West Ukraine and MTT/ED/AP/EMC Republic of Georgia Chapters. Its topics were expanded and the structure of participants specifies by its international character. The peculiarities of the DIPED Seminars are the following

the topics of discussions are defined by a composition of participants, in the basis of which stable group lies,

the time allocated for the free lobby discussions is comparable to the time of the section discussion.

This year, the DIPED Seminar/Workshop is again held in Lviv. We hope that it will serve the further restoration and intensification of the conventional cooperation between scientific schools in the diffraction theory, widely presented in the program, as well as expansion of existing contacts and spheres of scientific interests. The Organizing Committee hopes that the DIPED-2005 work will be facilitated by the traditionally gold and nice September in Lviv.

ORGANIZED AND SPONSORED BY

IEEE MTT/ED/AP/CPMT/SSC West Ukraine Chapter
IEEE MTT/ED/AP/EMC Republic of Georgia Chapter

in Cooperation with

Pidstryhach Institute of Applied Problems of Mechanics and Mathematics,
NASU, Lviv, Ukraine
Tbilisi State University, Tbilisi, Georgia

in Technical Co-Sponsorship with

IEEE Electron Devices Society

in Cooperation with

IEEE MTT, AP, CPMT, and SSC Societies
IEEE Section Ukraine

INFORMATION FOR PARTICIPANTS

LANGUAGE

Official language of the Seminar/Workshop DIPED-2005 is English.

PRESENTATION

During the oral sessions the overhead and PC projectors will be accessible for the authors presenting their papers.

The sessions will be held in the Conference Hall of the Pidstryhach Institute of Applied Problems of Mechanics and Mathematics, 3”B” Naukova St.

PROCEEDINGS

The papers accepted before the deadline will be published in the Seminar/Workshop Proceedings before the event. The authors will get them during the registration.

REGISTRATION

The registration of the participants will be held on September 12, (Monday) from 9 a.m. to 6 p.m. in the Conference Hall of the Pidstryhach Institute of Applied Problems of Mechanics and Mathematics, 3”B” Naukova St.

The registration fees will be 20 USD for the Ukrainian and 60 USD for the foreign participants. This payment can be made during the registration.

The registration fee covers:

- the conference kit
- the copy of Seminar/Workshop Proceedings
- the coffee breaks
- the Seminar/Workshop dinner.

SEMINAR/WORKSHOP SCHEDULE

	Morning	Afternoon	Evening
Monday, September 12	Registration	Registration	Welcome Party
Tuesday, September 13	Opening Plenary Session	Technical Sessions	Excursion
Wednesday, September 14	Technical Sessions	Technical Sessions	Theatre Visit
Thursday, September 15	Technical Sessions	Closing Session	Seminar Dinner

ACCOMMODATION

The organizers offer accommodation in the hotels, which are recommended and reserved for the convenience of participants. The proposed hotels are:

George Hotel

Address: 1 Mickiewich sq., 79000 Lviv, Ukraine
Tel.: 380 322 971144
Fax: 380 322 725952
e-mail: geoh@mail.lviv.ua
WEB site: <http://georgehotel.ukrbiz.net/>

Lion's Castle Hotel

Address: 7 Glinki St., 79012 Lviv, Ukraine
Tel.: 380-322-35-11-00
380-322-97-15-63
Tel./fax: 380-322-35-11-02
WEB site: <http://www.lionscastle.com>

Suputnyk Hotel

(the nearest to the IAPMM)

Address: 116 Knyagyni Olgy St., 79060, Lviv, Ukraine
Tel.: 380-322-645622, 652507
Tel/Fax 380-322-641523, 633374
e-mail: suputnyk@mail.lviv.ua
WEB site: <http://www.suputnyk.com>

The hotel with fees approximately 10 USD per day will be also accessible for the Seminar participants.

For accommodation please contact Dr. Olga Zamorska
Pidstryhach Institute of Applied Problems
of Mechanics and Mathematics, NASU
3"B" Naukova St.
Lviv, 79601, Ukraine
Tel.: +380 322 65 19 44, fax: +38- 322 63 70 88
e-mail: zam@iapmm.lviv.ua

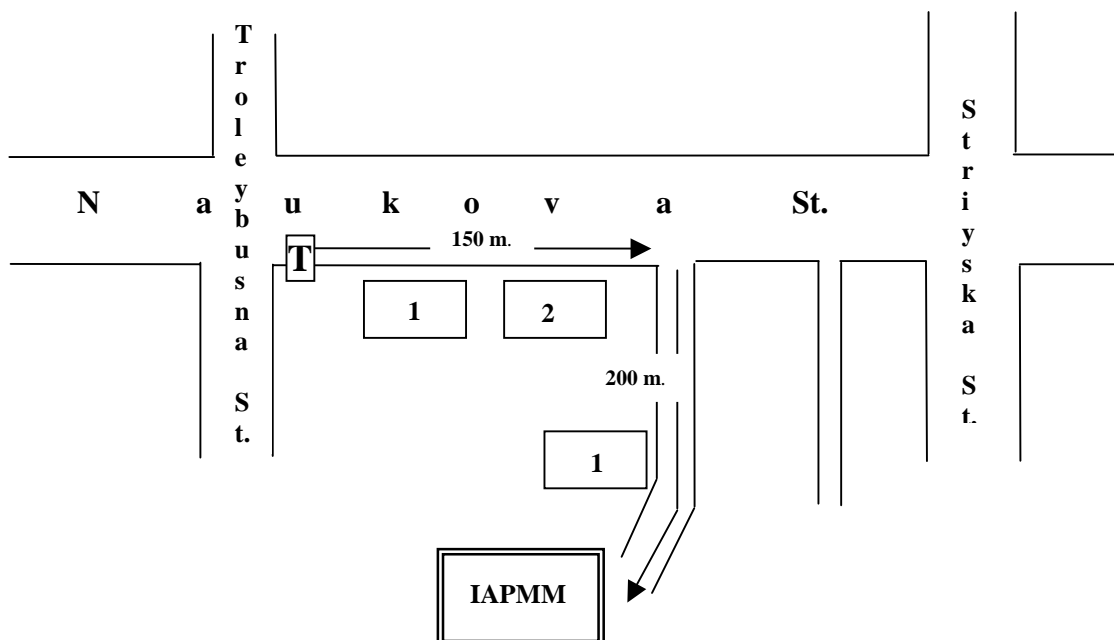
SOCIAL PROGRAM

The organizers invite all participants of the Seminar/Workshop to the:

- Welcome party
- City Excursion
- Theatre Visit
- Seminar Dinner

IAPMM LOCATION

If you arrive in Lviv with an airplane you can get to Institute in such a way. In Lviv airport, you can take the taxi minibus No 95 and get off at Vyhovs'ky St. stop, at this stop take the taxi minibus No 67 heading the same direction and get off at Trolleybusna St. stop. The location of the IAPMM is shown in the following scheme



T – No 67 Taxi stop.

1 – Physico-Mechanical Institute.

2 – Institute of Geology.

If you arrive with a train to central Lviv railroad station, please use the taxi minibus No 67 and the above map to reach the Institute. The price of one trip in taxi minibus is equal to 1 hryvnya (about 0.20 \$ US).

You can also take a taxi at airport or railroad station; the approximate cost of the taxi trip is equal to 25 hryvnya (about 5 \$ US).

TECHNICAL PROGRAM

Monday, September 12th

9⁰⁰-18⁰⁰: Registration

Tuesday, September 13th

9³⁰-10⁰⁰: Opening and Welcome

10⁰⁰-13⁰⁰: Plenary Session

- Optimization strategy for multiport waveguide junctions with canonical types of artificial discontinuities *F. G. Bogdanov, G. Sh. Kevanishvili, I. G. Kevanishvili, D. D. Karkashadze*, Tbilisi, Georgia
- Effective material parameters of dielectric layer with metal periodic array *S. L. Prosvirnin*, Kharkiv, Ukraine, *S. Zouhdi*, Paris, France
- A cost comparison of the ellipsoidal acoustic infinite element method and the spherical acoustic infinite element method *Yang Ruiliang, Zhou Yide, Fan Xiaowei*, Zhongyuan, China
- Inverse problem solution for layered dielectric structures using rational interpolation method *M. V. Andreev, V. F. Borulko, O. O. Drobakhin, D. Yu. Saltykov*, Dnipropetrovsk, Ukraine

13⁰⁰-14⁰⁰: Lunch

14⁰⁰-17⁰⁰: FDTD and Operator Methods

- Operator method in the problem of wave diffraction by flat semi-infinite strip grating *S. N. Vorobyov*, Kharkiv, Ukraine
- Time-domain methods in problems of model synthesis of microwave power compressors *K. Yu. Sirenko*, Kharkiv, Ukraine
- Semiasymptotic method for plane with quasiperiodic spatial perturbation of gyrotropic surface impedance *V. F. Borulko*, Dnipropetrovsk, Ukraine
- Innovative approaches to parallelizing finite-difference time-domain computations *D. A. Gorodetsky and Ph. A. Wilsey*, Cincinnati, USA
- Simulation of EM scattering on open surfaces by method of auxiliary sources *L. R. Manukyan, I. U. Paroshina, T. L. Gogua, D. G. Kakulia*, Tbilisi, Georgia
- Axial symmetric electromagnetic excitation of a finite conical screen by the ring sources (Comparison of TE- and TM- wave scattering characteristics) *D. B. Kuryliak, O. B. Trishchuk*, Lviv, Ukraine

Wednesday, September 14th

10⁰⁰-13⁰⁰: *Complex Media*

- Special ditch for solid-state waveguide, multielement laser (SWMEL)
L. E. Berdzenishvili, Tbilisi, Georgia
- Modeling of EM waves for simplified cases of urban and terrain areas by method of auxiliary sources *D. G. Kakulia, D. V. Mazmanov, G. G. Kajaia, T. L. Gogua*, Tbilisi, Georgia
- Microstrip array in open resonator *A. V. Archipov, I. K. Kuzmichev, I. I. Reznik, D. G. Seleznyov*, Kharkiv, Ukraine
- Numerical solution of an integral equation for electromagnetic field in conductive medium with crack *Y. V. Datsko, Y. P. Kulynych*, Lviv, Ukraine
- Susceptibility and effects of the resonant scattering of intensive fields by weakly nonlinear dielectric layer *V. V. Yatsyk*, Kharkiv, Ukraine
- Electromagnetic waves in isotropic waveguide filled by radially non-uniform dissipative plasma *V. K. Galaydych, V. P. Olefir, A. E. Sporov*, Kharkiv, Ukraine
- Development of simulation model for shielded twisted pair cables in EMC immunity problems *L. Diaz,* Germany, *R. Jobava,* *D. Karkashadze,* *F. Bogdanov,* *E. Yavolovskaya, A. Gheonjian, I. Badzagua, S. Iosava*, Tbilisi, Georgia

13⁰⁰-14⁰⁰: *Lunch*

14⁰⁰-16⁰⁰: *EM Wave Propagation*

- Dielectric heating with electromagnetic field *A. N. Dumin, O. A. Dumina, M. V. Nesterenko and V. S. Popov*, Kharkiv, Ukraine
- The near zone fields and polarization characteristics of crossed impedance vibrators over perfect conducting plane *M. V. Nesterenko, V. A. Katrich and V. M. Dakhov*, Kharkiv, Ukraine
- Scattering of H-polarized electromagnetic wave by a dihedral wedge with a solid cylinder with a sectoral groove at the apex *Y. V. Shepilko*, Kharkiv, Ukraine
- Electromagnetic field in rectangular waveguide with magnetized fractal ferrite plate *A. O. Misyura, V. M. Onufriyenko*, Zaporizhzhya, Ukraine
- Numerical and analytical study of the behavior of the HF electromagnetic field on the surface of the thin layer *F. Tahar Belkacem, S. Khoudiri, M. Djennah*, Algiers, Algeria
- Understanding the beam area at quantum level using string theory *Kartheek R. Solipuram*, Hyderabad, India

Coffee break

16²⁰-18⁰⁰: *Analytical and Numerical Methods*

- Relativistic rotation and classic electrodynamics validity limit *I. Lomidze, D. Karkashadze, J. Javakhishvili*, Tbilisi, Georgia
- On the theory of a spherical radome *G. Sh. Kevanishvili, K. V. Kotetishvili, I. G. Kevanishvili, G. G. Chikhladze, T. A. Kokrashvili*, Tbilisi, Georgia
- About one bilateral approximation method of determination of the branching points of nonlinear integral equation arising in the theory of antennas synthesis *B. M. Podlevskyi*, Lviv, Ukraine
- Construction of boundary operators for the Laplacian. I. Using of simple layer potential *A. D. Polishchuk*, Lviv, Ukraine
- Construction of boundary operators for the Laplacian. II. Using of double layer potential *A. D. Polishchuk*, Lviv, Ukraine
- Wiener-Hopf analysis of the elastic wave diffraction by the finite crack located at the plane interface between the elastic isotropic half-space medium *D. B. Kuryliak, M. V. Voytko*, Lviv, Ukraine
- About local properties of gradient method for free phase problem with isometric operator *Yu. P. Topolyuk*, Lviv, Ukraine
- Body shape reconstruction from scattering patterns at resonant frequencies *O. V. Kusyi, N. N. Voitovich*, Lviv, Ukraine

Thursday, September 15th

9⁰⁰-11⁰⁰: *EM Field Application*

- Investigation of the biological objects by scattered waves *L. E. Berdzenishvili, Z. G. Melikishvili*, Tbilisi, Georgia
- Metallic photonic crystal filters design with MMP methods *Cui Xudong, Christian Hafner, Kakhaber Tavzarashvili, Ruediger Vahldieck*, Zurich, Switzerland
- Efficient field solvers for the analysis of photonic crystal filters *K. Tavzarashvili, Ch. Hafner, Cui Xudong*, Zurich, Switzerland, *D. Karkashadze*, Tbilisi, Georgia
- Averaged SAR distributions and temperature rise estimation in child head model with 835MHz handset phone *L. Shoshiashvili, A. Razmadze, N. Gritsenko, R. Zaridze*, Tbilisi, Georgia
- Methodology of determination of BI-media parameters through the investigation of scattered EM fields *A. Y. Bijamov (Jr), R. S. Zaridze, D. D. Karkashadze*, Tbilisi, Georgia
- Reliability evaluation of complicated electromagnetic systems *A. R. Sydor*, Lviv,

Ukraine

- Qualitative analysis of precise frequency multiplier of harmonic oscillations
P. Tymoshchuk, M. Lobur, Lviv, Ukraine

Coffee break

11²⁰-13⁰⁰: *Antenna Synthesis*

- Numerical and experimental investigation of dielectric coated personal communication systems (PCS) antenna *G. N. Ghvedashvili, K. N. Tavzarashvili, D. G. Kakulia, R. S. Zaridze, Tbilisi, Georgia*
- The method of antenna directivity calculation on the basis of main patterns
B. M. Levin, Lod, Israel
- The calculation method of reflectarray of microstrip radiators *B. M. Levin, Lod, Israel, M. D. Parnes, Ashkelon, Israel*
- Numerical solving of two-dimensional nonlinear spectral problem arising in antenna synthesis with flat radiating aperture *L. P. Protsakh, P. O. Savenko, M. D. Tkach, Lviv, Ukraine*
- Comparison of two optimization criteria in antenna problems with free phase pattern
O. O. Bulatsyk, N. N. Voitovich, Lviv, Ukraine
- Synthesis of the circular array in the given range of frequencies *M. I. Andriychuk, Lviv, Ukraine*
- Development of FEM/MOM approach for investigation of vehicle class antennas
G. Lomidze, P. Tsereteli, Z. Sukhiashvili, R. Kvaratskhelia, R. Jobava, Tbilisi, Georgia

13⁰⁰-14⁰⁰: *Lunch*

14⁰⁰-16³⁰: *Acoustics*

- Scattering of high-frequency wave by a thin-walled plane rigidly supported inclusion
V. F. Emets, Lodz, Poland
- Spectral characteristics of wave process in circular cylinder rotated in acoustical medium with a non-constant angular velocity *O. P. Piddubniak, Lodz, Poland, N. G. Piddubniak, Lviv, Ukraine*
- Sound radiation by rotating porous cylinder *O. P. Piddubniak, Lodz, Poland, N. G. Piddubniak, Lviv, Ukraine*
- Periodically non-stationary random processes modeling: Approach on the basis of harmonic representation *Ihor Javorskyj, Bydgoszcz, Poland Ihor Kravets, Lviv, Ukraine, Ihor Isayev, Steve Brooks, Cambridge, UK*
- Iterative process for a problem of elastic disturbance propagation in un-uniformly strained semi-space *V. F. Chekurin, O. Z. Kravchyshyn, Lviv, Ukraine*

17⁰⁰-20⁰⁰: *Closing Session and Dinner*

DIPED-2005 Awards

LVIV – THE PEARL OF EUROPE

Lviv is the biggest cultural and industrial center of Western Ukraine. For its quick development Lviv thanks its profitable geographic location on the Roztochya area (Baltic-Black Sea line). The population of Lviv is 830,000. The city is located on the cross of the most important transport ways, which connect Ukraine with the other European countries. This makes Lviv favorable for both tourism and business.



Lviv. The Boim's Chapel

The king of Halychyna (Galicia) Danylo founded a castle town in the middle of the 13th century, in the hills, on the Poltva River, at the place of the ancient settlement, and named it in honour of his son, Lev. Lviv was first mentioned in the chronicles of 1256. Due to its geographical position at the crossing of the old trade routes – from Kyiv to the West and from Byzantium to the Northern seas and because of the constant care of Galician princes, Lviv quickly turned into a highly-developed city. In 1272 it became the capital of Galician-Volyn State.

Having conquered Galicia in the 14th century, Kazimerzh III, the King of Poland, introduced Magdeburg Law in Lviv (1356). Since Princes' times, Armenians, Jews, and Germans lived in Lviv. In the 14th century Poles, Italians Greeks come to the city.

In regards to the quantity and significance of historical architectural monuments, Lviv is one of the richest cities in Ukraine. All together there are more than 2,000 objects of historical property.

The oldest preserved architectural monuments are concentrated at the foot of Zamkova (Castle) Hill. St. Mykolai's (Nicholas) Church (13th century) was built for Constance, the wife of Galician King Lev, the daughter of Hungarian King Bela.

Rynok Square (or Market Square), the heart of trade, administrative and social life of those times was located in the centre of this "city within the walls". In the medieval times this square was a place of a lively trade. Stone scales, pillory and a pool with fish for selling were also on the square. The middle of the square has always been a site for a house of the city government, the City Hall. On its perimeter the square was densely built up with three-window stone buildings. Every house had its own, unique history. The oldest ones that have preserved their original design are in the style of Renaissance: "the Black House", Korniakt's Palace with wonderful Italian Yard inside it.



**Lviv. Rynok Square
(the Grand Place in Ancient Lviv)**

Katedralna (Cathedral) Square with a magnificent building of Latin Cathedral is adjacent to the south west corner of Rynok Square. The construction of the cathedral began in 14th century and lasted more than 100 years. The interior of Latin Cathedral amazes by its lancet Gothic arches, narrow stained-glass windows, lavish carvings of its altars and wall frescoes.



Lviv.
The Ukrainian Yura cathedral

House-building of the city centre reached its prime in the 16th – early 17th centuries. At that time a beautiful Renaissance ensemble consisting of Uspenska Church (the Church of Assumption), the Chapel of Three Prelates and a bell tower, was built in Ruska Street. They are the example of combination of Western European Renaissance and Ukrainian architectural traditions. Korniakt's bell tower named after the person, who financed its

construction, is the most beautiful church tower in Lviv.

In the 18th century baroque style prevailed in Lviv architecture. The best example of this style is an incredible ensemble of St. Yuri's (George) the Dragonfighter Cathedral (1744-1770, arch. B. Meretyn), that was built on St. Yuri's Hill. The cathedral was lavishly ornated by J. Pinzel, a famous artist whose works embellished many churches in Galicia. The cathedral belfry has the oldest masterpiece of Ukrainian foundry, i.e. the bell that was cast in 1341 by the craftsman Yakiv Skora. Dominican Church (1745-1798, arch. Jan de Witte) was built simultaneously with St. Yuri's Cathedral. It is a late baroque construction with a richly ornate facade.

“Austrian Period” (since 1772) in Lviv architecture was marked by extension of city borders outside the city fortifications, formation of new residential districts along ancient trade roads. Medieval ramparts were demolished and replaced by parks and boulevards. The Opera House built in 1897-1900 by Z. Gorgolewski is a vivid example of that period.



Lviv.
Opera house

Lviv architectural ensemble is an example of the perfect combinations of different ages and styles, building and artistic influences of different cultures and peoples. Lviv has preserved its historical planning structure, its landscape, masterpieces of architecture, fine and applied arts. All together it makes a unique city as today's Lviv is. The city is inscribed on the UNESCO List of World Heritage Cities.

Welcome to the museum city of Lviv, the unique pearl of Europe!

PIDSTRYHACH INSTITUTE OF APPLIED PROBLEMS OF MECHANICS AND MATHEMATICS

The Lviv Branch for Mathematical Physics at the Institute of Mathematics, Ukrainian Academy of Sciences (UAS), was founded in 1973 on the basis of Mathematical and Physical Department of Physico-Mechanical Institute, UAS. The research body of the Institution was formed by Ya. S. Pidstryhach, Academician of UAS. The Branch begins to develop actively the investigations in mechanics of deformable bodies, thermomechanics, non-equilibrium thermodynamics, mathematical modelling of interconnected processes of different physical nature, fundamental and applied problems of mathematics that were generally recognized and supported by the academic community. The applied aspects of these investigations are aimed at analysis of the structure elements operating in corrosive media at high temperatures under varying heat and force loadings, in powerful electromagnetic fields, with regard for interconnection of physico-mechanical processes, surface phenomena, material structure and other factors of different nature that influence essentially the service properties of structures. They are used in industry on developing the know-how and modern engineering equipments.

High level of these fundamental and applied investigations, the skilled researchers employed at the institution served as a preface to formation (in 1978) of the Institute for Applied Problems of Mechanics and Mathematics, UAS, a new research academic institute (on the basis of Lviv Branch for Mathematical Physics of Institute of Mathematics). The Institute has become a recognized research centre of mathematical modeling in mechanics of deformable media, coordinator in a number of problems of mechanics and mathematics in the Western Region of Ukraine. Then the Institute comprised the Computational Centre (CC), Special Design Office (SDO) and the Carpathian Research-Methodical Geophysical Party (CRMGP).

The structure of the Institute changed somewhat in 1991-1992. On the basis of geophysical departments the Carpathian Branch of Subotin Geophysical Institute was established. The CRMGP was joined to it. The SDO was reorganized into the Research Centre of Aeronautic Information and Ecological Monitoring, belonging to the Hlushkov Institute of Cybernetics. On the basis of CC and the Institute's Laboratory the Research Centre of Mathematical Modeling was formed.

Those were V. Ya. Skorobohat'ko, D. Sc. (1927-1996), P. S. Kazimirs'cy, D. Sc. (1925-1990), Yu. M. Kolyano, D. Sc. (1936-1990), B. L. Pelekh, D. Sc. (1940-1995) who together with Ya. S. Pidstryhach (1928-1990) - the founder and director of the Institute - contributed considerably into the formation and development of research trends.

For the time being 254 employees work at the Institute, including 201 researchers and engineers (25 of them are Doctors and 96 are Cand. Sc.). The Centre of Mathematical Modelling joins 53 employees, including 26 researchers and engineers (4 of them are Doctors and 12 are Cand. Sc.).

The researches of priority in the Institute are:

- operator methods of functional analysis and linear algebra and their application for the problems of mathematical physics;
- non-classical problems (conditionally correct, with degeneracy, on manifolds) for equations with partial derivatives and dynamic systems;
- numerical and analytical-numerical methods for calculating the applied problems (non-correct, non-linear, inverse);
- thermodynamic fundamentals and methods for constructing the mathematical models of mechanics of multi-component manifolds with an edge in the extended phase space of parameters of interconnected different nature processes;
- mathematical and theoretical-experimental methods for calculation, optimization and prediction of deformability, durability and mechanical behaviour of discrete-continuous structure systems under complex outer action;
- mathematical fundamentals of fracture mechanics and contact phenomena;
- mathematical modeling and study of surface phenomena mechanics, bodies with coatings and layer composite structures.

15 research departments are carrying out their investigations in the above-mentioned areas:

- mechanics of deformable bodies (*M. M. Nykolyshyn*)
- differential equations and functional theory (*V. O. Pelykh*)
- theory of physical-mechanical fields (*O. R. Hachkevych*)
- algebra (*V. M. Petrychkovych*)
- mechanics of thin-walled structure elements (*M. V. Marchuk*)
- physico-mechanical modeling (*S. G. Kyiak*)
- functional analysis (*O. V. Lopushans'ky*)
- mathematical methods of fracture mechanics and contact phenomena (*H. S. Kit*)
- thermomechanics (*R. M. Kushnir*)
- mathematical problems of mechanics of the non-homogeneous bodies (*V. F. Chekurin*)
- numerical methods of mathematical physics (*N. N. Voitovich*)
- mathematical modeling of self-organization phenomena (*V. V. Hafijchuk*)
- modeling of damping systems (*V. M. Shopa*)
- nonlinear mathematical analysis (*A. K. Prykarpats'ky*)
- mathematical physics (*B. Yo. Ptashnyk*),

and 3 research departments of Mathematical Modeling Centre:

- mathematical modeling of nonequilibrium processes (*E. Ya. Chaplya*)
- nonclassical problems of heat-mass transfer (*T. S. Nahirny*)
- mathematical methods of calculation experiment (*M. H. Prytula*).

The post-graduate course, attached to the Institute, works in 10 specialities and the course for a Doctor's degree in 3 specialities. The Institute has a specialized research council on Doctor's degree qualification (speciality 01.02.04 - mechanics of deformable bodies and 01.05.02 - mathematical modeling and calculation methods). The Institute has a common chair of mathematical modelling and the branch of the chair for computational mathematics with Lviv University.

The researchers of the Institute have published over 120 monographs and textbooks. The Institute has its own journal "Mathematical methods and physico-mechanical fields" (four times a year) that is translated by the publishing house "Plenum", USA. The Institute Web Site is accessible for the interested persons; please refer to <http://www.iapmm.lviv.ua>.

The IEEE MTT/ED/AP/CPMT/SSC West Ukraine Chapter, organized in 1995 by Prof. Nikolai N. Voitovich, is functioning at the Institute. Dr. Mykhaylo I. Andriychuk is the Chapter Chair, and Mr. Oleh V. Kusyy is its Secretary/Treasurer now. The activity of the Chapter is directed on organizing the scientific seminars, conferences, spreading the information about IEEE and International conferences, support of student's scientific activity etc. For its activity the Chapter was awarded as the best Chapter of the IEEE CPMT Society in 2000, and the best Chapter of the IEEE Region 8 (Europe, Africa, and Near East) in 2002.

The Chapter together with the Institute organizes the annual International Seminar/Workshop on Direct and Inverse Problems of Electromagnetic and Acoustic Wave Theory (DIPED) since 1995. Both the Tbilisi State University and IEEE MTT/ED/AP/EMC Republic of Georgia Chapter are the Seminar co-organizers. The Seminar/Workshop is organized alternately at the Institute of Applied Problems of Mechanics and Mathematics, Lviv, Ukraine and Tbilisi State University, Tbilisi, Georgia. The Proceedings of DIPED Seminars are published in Lviv and distributed by the IEEE Book Broker Program among the scientific and university libraries of USA and Canada. Additional information about Chapter activities and about IEEE you can get on the Web Site: <http://www.ewh.ieee.org/soc/cpmt/ukraine/>.