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TESLA Project TeV Energy Superconducting Linear Accelerator



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ELAN – European Linear Accelerator Network

XVI SPIE-IEEE WILGA Symposium on Photonics and Web Engineering 30 May – 5 June 2005



A photograph of WILGA 2005 Symposium participants under the flag of the IEEE Poland Section.

Since 8 years there is organized twice per annum a research Symposium, which is known under the abbreviated name of the IEEE-SPIE WILGA in the national research community of the photonics, web technologies and electronics for the high energy physics experiments. The WILGA Symposium is gathering young researchers, M.Sc. and Ph.D. students as well as their tutors. Recently the role of the Symposium is to show the level of the Ph.D. and M.Sc. theses in different technical universities all over this country, and in particular at their electrical and electronics engineering departments as well as technical physics and mechatronics. Very high requirements to accept the papers for the presentation and the print in English and the participation of many international guests caused that the Symposium gathers only the best from these works. One of the biggest successes of this Symposium is that it gathers each year more than 100 relevant papers, from the M.Sc. and Ph.D. theses, which fulfill all the tough printing requirements in the international conditions. The Symposium slowly paves its way to be a nationwide and international forum of young researchers in the domain of advanced electronics and photonics. The Symposium has been publishing its work, since several years now, in the Proceedings of SPIE, USA. This year, the XVIth Symposium lasted a whole week from Monday till Sunday and gathered over 260 presentations and over 300 participants.

A lot of colleagues professors from the national academic centers is asking how it is possible to organize such a Symposium from the scratch and why it got such a success. One can try to name these factors, which seem to cause such an event very attractive for the young researchers.

It is comparatively difficult to present a work on WILGA Symposium. The presentation time is short. Only English is accepted. There are presented only the own research results. There are no parallel sessions. The work has to be preliminarily accepted by the student's tutor. Each presentation is widely debated.

WILGA offers to the young researchers the possibility to present their work in the newest branches of the science and technology. Such branches are clearly preferred during the following editions of the Symposium. There are organized topical sessions devoted to the most current research directions. The authoring sessions are invited and done frequently by the leading experts in their fields.

WILGA is organized under the most attractive umbrella. This organizational sponsorship is offered by the worldwide professional associations like IEEE and SPIE, international institutions like CERN, Geneva and DESY, Hamburg, and leading national institutions like the Committee of Electronics and Communications of Polish Academy of Sciences, Association of Polish Electrical Engineers, Association of Polish Mechanical Engineers. This group of institutions is joined by the technical universities from Warsaw, Białystok, Wrocław, Łódź, Kielce, Gdańsk, Lublin, Opole, Rzeszów, Szczecin, Poznań – which sent the largest number of students and young researchers.

It is comparatively difficult for a young researcher to publish a paper in WILGA Proceedings. The Proceedings are published abroad in a form of a book. The papers are peer reviewed. There is accepted 50% of the presented papers on the average.

WILGA gathers many young people from distant places in the country and from abroad. There is a possibility to compare personally the work conditions and research topics in different academic centers.

WILGA is unbelievably cheap and convenient. There is no comparable conference in this respect in this country. WILGA offer a lot for low price. There is no conference fee. There is a full social service – night and food on the modest but acceptable level. The fourth meal is served each day late at night, and is customarily sponsored by the IEEE – Poland Section.

WILGA is very diligent. The sessions last from early in the morning till late at night. There is organized an after supper night session lasting till 10 P.M. The fourth meal is served at a grill after this session.

WILGA bases solely on the voluntary work of the organizers and participants. The whole work is done by the students for the students. The students do the registration of participants. They organize the Symposium web site. They p[prepare the materials for print. The core of the work is done by the PERG/ELHEP ISE WUT Laboratory members and the SB IEEE members. However, they try to distribute the work among all interested participants.

WILGA is organized only by electronic media. There is not even a trace of traditional organizational methods. There are no invitations. The paper is not used at all. The whole information exchange is online over the net. A simple web site is http://wilga.ise.pw.edu.pl The major mail contact box is photonics@ise.pw.edu.pl

WILGA has no solid and permanent structures basing typically on the human relations and importance of people in the research world. The young researchers receive this feature as a very positive. The Program Committee is created exclusively during the Symposium, only from the present in WILGA senior researchers and tutors.

WILGA seems to base on the three simple and positive activity motifs of the young people: 1-Have Fun, 2. Have More Fun, 3-Learn a lot. The English expression 'have a fun' is here a mental shortcut for such feelings of young people as eagerness to get acquainted with other young researchers being in the similar life situation, willingness to participate in a real scientific symposium (for a number of them this is the first meeting of this kind) and the research curiosity of the world.

The XVIIIth IEE-SPIE WILGA Symposium 2006 will be held on 29 May - 4 June, during the week after the National Microwave Conference MIKON (which takes place every second year). We invite warmly young researchers and their tutors to WILGA on the Vistula River to the Resort owned by the Warsaw University of Technology.

Prof. dr hab. Ryszard S.Romaniuk,, WILGA Symposium Chair Warsaw University of Technology





WILGA 2005 Symposium was preceded by official opening of the PERG/ELHEP Laboratory of Photonics and Electronics for High Energy Physics Experiments at the Institute of Electronic Systems, Warsaw University of Technology. From left: prof. Dieter Proch, DESY, prof. Janusz Dobrowolski, ISE WUT, dr Stefan Simrock, DESY, prof. Maciej Wladyslaw Grabski, The Foundation for Polish Science, prof. Jozef Lubacz, ISE WUT.



Coordinated Accelerator Research in Europe (CARE)

Meeting of the CARE Steering and Dissemination Committees in Warsaw (24-25 June 1004). Dr Roy Aleksan from CEA, the CARE Chair, is sitting third from the left. Since 2004 the WILGA Symposia are a part of the CARE program.



The work of ELHEP Laboratory is closely associated with the international research on superconducting accelerator technology coordinated by the DESY – Deutsches Elektronen Synchrotron in Hamburg.

The work carried out in the ELHEP Laboratory (Electronics for High Energy Physics Experiments) embraces applied research, design, construction and tests of new generation of low level radio frequency (LLRF) measurement – control systems for superconducting linear accelerators and free electron lasers. A few

versions of the LLRF systems are scheduled for tests during the realization of the CARE program in 2004-2007. The following technologies are used: PPGA chips with DSP capabilities, DSP chips, embedded PCs, and multi-gigabit photonic data

transmission networks. Prototypes of the researched systems will be thoroughly tested in laboratory and then industrial conditions. The industrial tests will be done in close cooperation with DESY at the superconducting linea facilities available there. Some tests are also predicted in CERN and in FERMILAB.

The work package on LLRF system, inside the CARE Project, covers the following tasks: Algorithms, simulations, identification and control of accelerator

Algorithms, simulations, identification and control of accelerator cavities and RF gun (MatLab and DOOCS environments); Parametric behavioral modules designed in FPGA/VHDL technology (DSP algorithms, control, data acquisition, monitoring and diagnostics);

Circuity design for the LLRF control systems; Hybrid (electronic and photonic) PCB design (Protel, etc.); Laboratory tests of particular parts of the LLRF control system: communication interfaces, VME, TCP/IP, USB, internal interfaces, embedded subsystem, optical data transmission subsystem, fast SERDES circuits, FPGA subsystems; Preparation of system version for industrial tests with the superconducting linac;

Implementation of the prototype LLRF control system for production;

Conclusions from the research on the prototype for next generation of the system.

In parallel to the research tasks, the laboratory has also associated teaching duties. These include: FPGA/DSP based system design, hybrid PCB design, and tests of advanced electronic and photonic systems.

Further information is available from the ELHEP laboratory: R.S.Romaniuk, D.Sc., phone: (48-22) 660 5360, (48-22)660 7986,

phone: (48-22) 660 5360, (48-22)660 798 fax: (48-22) 825 23 00,

FPGA-DSP controller for 8 SC accelerator cavities

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ELHEP/PERG - design laboratory



ELHEP/PERG - fabrication and measurement laboratory

Signal Processing Symposium, 03–05 June 2005 Wilga, Poland



Participants of the 2005 WILGA DSP Symposium. Dr K.Kulpa, DSP Symposium Chair is standing third from the left

The Signal Processing Symposium in Wilga was organized for the second time. Two years ago, in May 2003, together with XII IEEE-SPIE Symposium on Advanced Electronics, for the first time the Digital Signal Processing and Radar Signal Processing Sessions ware present. These Sessions gathered more than 30 participants and 4 guests from abroad. Nineteen high level articles were presented at oral and poster sessions. After the success of the first event the much greater Signal Processing Symposium was organized this year. The main goal of the symposium was to create forum for students and scientists to present their latest research results and establish new contacts.

The Signal Processing Symposium Wilga 2005 took its place on 3-5th June 2005 at Warsaw University of Technology in the Holiday Camp in Wilga Village (near Warsaw). The symposium was a part of the XIV IEEE-SPIE Symposium on Advanced Electronics and all delegates had also access to the parallel sessions provided at that conference.

Signal processing Symposium Wilga 2005 gathered more than 100 participants, including more than 30 foreign guests. During the sessions, 66 high level papers were presented. The next Signal Processing Symposium is scheduled for May 2007.

Krzysztof Kulpa Chairman of the Signal Processing Symposium