

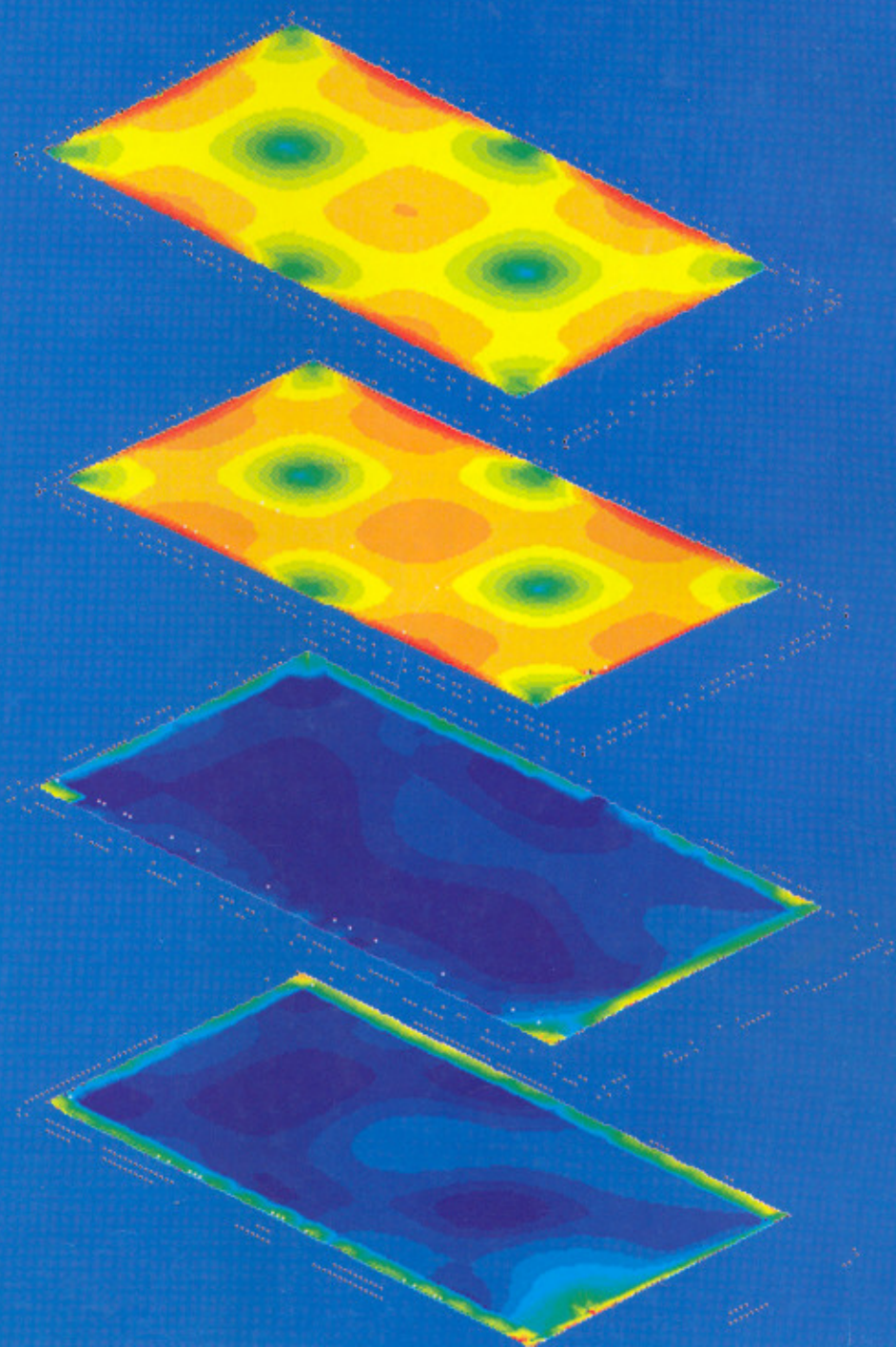
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# Go East, Son, Go East! A Report on MSMW-01

The Millimeter and Sub-Millimeter Wave  
Symposium  
June 4-9, 2001, Kharkov, Ukraine

## 1. A Few Facts

The legend says that Kharkov got its name from a 17th century farmer, Khariton, a.k.a. Kharko. Then again, two rivers flow through this city in northeastern Ukraine: the Lopan and the Kharkov. The town is located on the 50th parallel, and is situated farther to the north than, for example, any town of the USA (except for those that are in Alaska). It approaches, on this coordinate, the Canadian town of Winnipeg. It is located on the boundary of forest and steppe natural geography zones.

The area of Kharkov exceeds 300 square kilometers, and its population is about 1.6 million. The territory of the town features a hilly plain, with valleys, meadows, and ravines. The height of certain points varies from 19 m to 192 m above the sea level. The climate is moderate-continental, with a median yearly air temperature of +6.9°C. The coldest month is January (the average temperature, according to long-term supervision, is -6.1°C), and the warmest month is July (+20.5°C). The average yearly precipitation is 522 mm (over approximately 146 days).

Whether named for the peasant or the river, Kharkov became an important urban center during the Industrial Revolution. After World War I, the city served as Ukraine's capital. Many of its temples were destroyed by the Communist purges in the 1920-30s. Then came World War II, proving more devastating for Kharkov's people and cityscape, as the Germans and Russians took turns occupying the city.

Yet, Kharkov remains a major academic and industrial center. Kharkov University (Ukraine's first) was founded in 1805, and 20 other higher-education institutes accommodate 180,000 students! Nuclear-power equipment, farm machinery, airplanes, and electronic devices typify the output of Kharkov's factories.

## 2. A Brotherhood of People

I was born in Romania, not far away from Ukraine. I am the "product" of the early 1960s' Communist education. As we all know, the "socialist heaven" crashed and died. From the ruins of the "socialist heaven" there was something that emerged intact: the fruits of the strong, tough, and excellent science education system. Many universities, here in the States but also in Europe and other places, know what I am talking about, since they already had a taste of the quality of the Eastern European students. This is why, when Alex Nosich invited me to MSMW 2001, I was more than happy to accept his invitation. I boarded Austrian Airlines in Vienna and in less than three hours, I was in Kharkov.

Once I was able to pass the immigration and customs offices, I took the conference bus to the hotel. During the 45-minute ride Lyudmila and Nadia (the conference translators) gave me a comprehensive overview of the town's history and architecture. Large boulevards, large piazzas, and large buildings: A mixture between the classical Soviet-style architecture and the traditional Slavic architecture. The high point of this tour was the Svobody (Freedom) Square, the second-largest square in Europe! An aerial view of this square can be seen at [http://kharkov.vbelous.net/images/svobod\\_1.htm](http://kharkov.vbelous.net/images/svobod_1.htm). The little park in the center of the square is surrounded by the Kharkov National University (Figure 1) and Kharkov Military University (formerly the famous USSR Military Academy of Radio Engineering, a unique establishment in the USSR). A classical Lenin statue is still there, testimony of times that most people want to forget.

The Kharkov State University (Figure 1, renamed as the National University in 2000) is the oldest and most famous among the other 21 Kharkov universities (how many cities in the world have 21 universities?). It was established in 1805, and is one of the



Figure 1. The Kharkov National University. The Lenin statue is still there, for lack of funds at the town treasury.

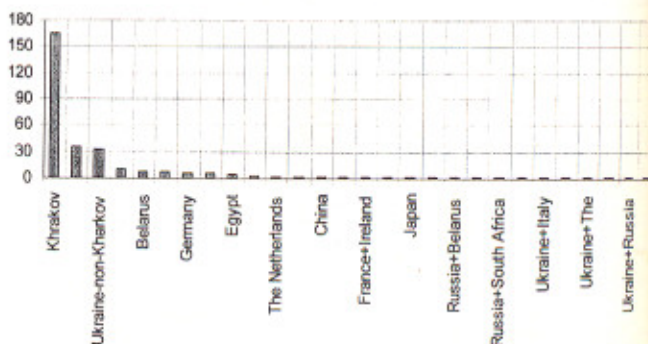


Figure 2. The "geography" of MSMW 2001.



Figure 3. Prof. Hermann Rohling, from the Technical University of Hamburg, discussing automotive-radar issues with Prof. Leo. Lighthart, from the International Center for Telecommunications and Radar, Technical University of Delft.



Figure 4. Dr. Joao Moreira, from Aero-Sensing Radarsysteme GmbH, Oberpfafenhofen, presenting an invited paper on the applications of Ka-band interferometric SARs.



Figure 5. Prof. Robert W. McMillan, from the Strategic Missile Defense Command, Huntsville, presenting an invited paper on focused Gaussian beams in atmospheric turbulence.



Figure 6a. Constitution Park, on the city tour: the English tank (WWI).



Figure 6b. Constitution Park, on the city tour: the American tank (WWII).



Figure 7. A photo of friends at the symposium banquet party (l-r): Alexei Kostenko, Alexander Shvetsov, Bob and Ann McMillan, and Alexander Nosich.

best universities of the former Soviet Union in mathematics and the physical sciences.

The first MSMW (Millimeter and Sub-Millimeter Wave) Symposium was held October 15-17, 1991, only two months before the collapse of the Soviet Union. It was organized by the Scientific Council of the National Academy of Science of Ukraine

(NASU), and the Institute of Radio-Physics and Electronics of NASU. The spirit of "glasnost" allowed greater interaction among participants, especially on topics related to new technologies and mm-wave components. The first MSMW conference had 300 participants, mainly from former Soviet Union countries.

The second MSMW Symposium was held in 1994, and the third was held in 1998. The 1998 symposium established new rules:

- English as the single official language
- Kharkov State University as a venue
- International organizations as sponsors
- Both Western and former Soviet Union authors as invited speakers

The 2001 MSMW Symposium, held June 4-9, had 293 papers, out of 316 submitted. The *Proceedings* (two volumes, printed in English) were distributed to the registered participants. For a reprint of the symposium *Proceedings*, contact Alexei Kostenko (e-mail: kostenko@ire.kharkov.ua). The "geography" of the MSMW is illustrated in Figure 2. The technical part of the Symposium included 23 invited papers and 15 sessions (with an average of 18 papers per session):

- A. Electromagnetic Theory and Numerical Simulation
- B. Atomic functions, wavelets, and fractals
- C. Wave Phenomena in Finite-Size Semiconductors and Solid-State Structures
- D. High- and Low-Temperature Superconductors
- E. Wave Propagation and Radar
- F. Remote Sensing
- G. Vacuum Electronics, Gyrotrons, and Free-Electron Lasers
- H. Quasioptical Techniques and Antennas
- I. Waveguide Devices and Integrated Circuits
- J. Solid-State Devices
- K. Radio Astronomy
- L. Spectroscopy and New Materials
- M. Scientific and Industrial Applications
- N. Electromagnetic Metrology
- O. Biomedical Applications

For example, Figure 3 shows Prof. Hermann Rohling, from the Technical University of Hamburg, discussing automotive radar issues with Prof. Leo Ligthart, from the International Center for Telecommunications and Radar, Technical University of Delft. In Figure 4, Dr. Joao Moreira, from Aero-Sensing Radarsysteme GmbH Oberpfaffenhofen also seemed very excited in presenting his invited paper on the applications of Ka-band interferometric SARs. In Figure 5, Prof. Robert W. McMillan, from the Strategic Missile Defense Command, Huntsville, is shown presenting his invited paper on focused Gaussian beams in atmospheric turbulence.

But as enjoyable as the technical part was, the social component was great. The tour of old Kharkov included a few marvelous churches, and Constitution Square (Figure 6), where an English tank from the First World War and an American tank from the Second World War give testimony of another type of relationship between the Eastern Europe countries and the West. The Wednesday-night organ concert (which took place in the bell-tower hall of the Church of the Assumption) was something to remember. The conference banquet (Figures 7 and 8) on Thursday night was done in the classical Slavic way: an opportunity for everyone to toast (from the bottom of his or her heart) for a better future, health, and prosperity. After all, isn't that what all wish for?

Finally, we had to say goodbye; but before that, we took the classic group picture (Figure 9). Prof. Yakovenko (Figure 10) could really congratulate himself for his (and his colleagues') great efforts.



Figure 8. Another photo from the symposium banquet party (l-r): Prof. Yakov Shifrin, Tuli Herscovici, and Anya Rudiakova.



Figure 9. The participants of the MSMW-01 symposium in front of the Kharkov National University.

## 2002 USNC/URSI Student Paper Winners



Figure 10. Prof. Vladimir Yakovenko, MSMW Chair, shown just after closing the symposium, looking extremely satisfied by its outcome.

For more information on Kharkov and Ukraine, visit the following websites:

[http://kharkov.vbelous.net/images/svobod\\_1.htm](http://kharkov.vbelous.net/images/svobod_1.htm)  
<http://www.kpi.kharkov.ua/new/default-r.asp?>  
<http://www.univer.kharkov.ua/>  
<http://megapolis.kharkov.ua/ru/>

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Figure 1. The USNC/URSI National Radio Science Meeting Student Paper Competition winners: (l-r) Sermsak Jaruwatanadilok, Sang-il Lee, and Sigrid Close.

The winners of the 2002 USNC/URSI National Radio Science Meeting Student Paper Competition were chosen January 10, 2002, at the meeting in Boulder, Colorado. The winners (Figure 1) were as follows:

**Sigrid Close**, "Scattering Characteristics of Meteor-Head Echo Data Collected Using ALTAIR," (advisor: Meers Oppenheim), Center for Space Physics, Boston University, Boston, MA; First Prize

**Sang-il Lee** and Yasuo Kuga, "Experimental Results for a CW-Mode Optically Controlled Microwave Switch with a Carrier Confinement Structure," Department of Electrical Engineering, University of Washington, Seattle, WA; Second Prize

**Sermsak Jaruwatanadilok**, Akira Ishimaru, and Yasuo Kuga, "Techniques to Improve Imaging Through Discrete Scattering Media," Department of Electrical Engineering, University of Washington, Seattle, WA; Third Prize ☎

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