

ANNUAL REPORT FOR YEAR 2018 IEEE AES SOCIETY

Chapter Name: IEEE Ukraine Section (East) AP/MTT/ED/AES/GRS/NPS Societies Joint Chapter (CH08199)

1. BASIC INFORMATION

A. Section Name: **IEEE Ukraine Section**

B. IEEE Region Number: **8**

C. Societies that your chapter is joint with, if any: **AP, MTT, ED, GRS, AES, NPS**

D. Chapter Web address, if any: <http://www.rocket.kharkov.ua/~euachapter>

E. Officers for 2018:

	Chair	Vice Chair	Secretary
Name	Prof. Nikolay T. Cherpak	Dr. Vitalii I. Shcherbinin	Dr. Kateryna A. Arkhypova
Address	Institute for Radiophysics and Electronics of the National Academy of Sciences of Ukraine (IRE NASU), vul. Akad. Proskury 12, Kharkiv, 61085, Ukraine	SPE "Renewable Energy Sources and Sustainable Technologies" National Science Center "Kharkov Institute of Physics and Technology" NASU (SPE RESST NSC KIPT), vul. Akademichna 1, Kharkiv, 61108, Ukraine	Institute for Radiophysics and Electronics of the National Academy of Sciences of Ukraine (IRE NASU), vul. Akad. Proskury 12, Kharkiv, 61085, Ukraine
Phone	+380-577-203-363	+380-667-966-655	+380-730-313-918
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Email	cherpak@ire.kharkov.ua	vshch@ukr.net	arkhykate@gmail.com

F. Officers for 2019 (if known at this time): **Chapter Elections process is in progress - <http://iee.org.ua/chapter-election/>**

G.

	Chair	Vice Chair	Secretary
Name			
Address			
Phone			
Fax			
Email			

2. FINANCIAL INFORMATION

A. Chapter funds (US \$) on 1 January 2018: 3275.16 USD

B. Income (US \$) during 2018:

1. Support from AESS*: 300 USD

2. Support from other IEEE Societies: 500 (MTT-S) + 650 (AP-S) + 500 (NPS-S) + 500 (ED-S) + 1000 (GRS-S) + 3000 (MTT-S Special Event Support) + 600 (AP-S Special Project) = 6750 USD

3. Rebates: 275 USD

4. Other support (specify): 0 USD

TOTAL INCOME: 7050.00 USD

* Include annual support, special-project support, travel grant support, Best Chapter Award support, and any other support from AESS.

C. Expenditures (US \$) during 2018: 4650.00 USD

D. End of year balance (US \$) as of 31 December 2018: 5675.16 USD

3. CHAPTER ACITVITIES DESCRIPTION

3.1 Summary Information for 2018

A. Number of technical meetings (in which a technical presentation is made)

- | | |
|--|-----------|
| 1. Presentations from student members of your chapter: | 3 |
| 2. Presentations from non-student members of your chapter:
(A member of your chapter is one who belongs to the AES-S Society and who lives within your Section. Do not include IEEE Distinguished Lecturers) | 15 |
| 3. Presentations from outside speakers:
(This includes speakers from outside your chapter. Do not include IEEE Distinguished Lecturers.) | 1 |
| 4. Presentations from IEEE Distinguished Lecturers: | 1 |
| 5. TOTAL numbers of technical meetings: | 12 |

B. Average total attendance at the technical meetings: **28**
(Average over all of the technical meetings held during the year.)

C. Number of non-technical (organizational) meetings held: **3**

D. Number of workshops, short courses, or conferences organized or co-organized by your chapter: **3**

3.2 Technical Meeting Information for 2018

Note: For “Category”, please use the following:

S: speaker is a student member of the chapter

M: speaker is a non-student member of the chapter (but do not include IEEE Distinguished Lecturers)

O: speaker is from outside the chapter (but do not include IEEE Distinguished Lecturers)

D: speaker is an IEEE Distinguished Lecturer.

	Title of Presentation/Name of Speaker	Attendance	Category
1	18.01.2018, Seminar with lectures: Yachin V.V., “Scattering of electromagnetic waves by 3D double-periodic multilayer magnetodielectric structures”	28	M
2	31.01.18, Seminar with lectures: B.Bekirov, I.V. Ivanchenko, <u>N. Popenko</u> , “Singularities of spin dynamics in HgCrCdSe and HgCrSe crystals in the vicinity of phase transitions”	23	M
3	19.03.18, Seminar with lectures: Kuzmichev I. K., “Open quasi-optical resonators in the millimeter and submillimeter band”	17	O
4	04.04.2018, Seminar with lectures: 1. <u>Barannik A.A.</u> , Cherpak N.T., Protsenko I.A., Gubin A.A., Kireev D., Vitusevich S.A.. “Millimeter wave effect of graphene in sapphire WGM resonator” 2. <u>Beletskiy M.M.</u> , Borisenko S.A., “Non-reflective passage of electromagnetic waves through a three-layer structure containing a layer with a negative dielectric constant and having an asymmetric dielectric environment” 3. <u>Cherpak N.T.</u> , Barannik A.A., He Y., Sun L., Zhang X., et al, “Microwave Surface Impedance and Complex Conductivity of Ba(Fe _{0.926} Co _{0.074}) ₂ As ₂ Single Crystals” 4. <u>Eremenko Z.</u> , Tarasov Yu., Volovichev I., “Mode decomposition method for the frequency spectrum of double-spherical cavity resonator” 5. <u>Kuznetsova K.</u> , Eremenko Z., Sklyar N., Shubnyi A., Glamazdin V., “Glucose minimal concentration limit determination using waveguide-differential dielectrometer at microwaves”	34	M O M M M
5	08.05.2018, Seminar with lectures: Nickolaev S.V., Pozhar V.V., Dzyubenko M.I, Nickolaev K.S., “Dependence of the intensity of fluorescent dyes in nano-containing solutions on the optical density of the components of the mixture”	28	O
6	09.05.2018, Seminar with lectures: 1. Kornienko Yu.V., <u>I. Lyashchenko</u> , “Pseudorandom Sequence Generator for the Astronomical Observing System”. 2. <u>Milyaev M.</u> , Vakula A., Tarapov S., Belous A., Solopan S., “Effect of heat treatment on the temperature dependence of ferromagnetic resonance in ZnFe ₂ O ₄ nanoparticles”	33	S S

7	12.06.2018, Seminar with lectures: 1. Dzyubenko M., Maslov V., Odarenko E., Rodionov V., “Prospects for the use of gradient gratings in lasers of the THz range” 2. Yachin V., Zinenko T., <u>Mizrakhy S.</u> , Nesterov I., Lukash A., “Mechanically Tunable Microwave Filter Based on Crossed Strip Gratings with Controllable Crossing Angle in Free Space”	17	O M
8	11.07.2018, Seminar with lectures: 1. Bukin O.V., “Georadar sounding with a signal with a step change in the carrier frequency” 2. Sobolyak A.V., “Using acousto-electromagnetic radiation and reflections at man-made objects for sounding and monitoring the land” 3. Ian Lo, <u>Lutsenko V.</u> , “Design of non-equidistant two-dimensional antenna arrays of decameter radio telescopes based on transformation matrices and Latin squares”	36	O S O
9	18.07.2018, Seminar with lecture: Prof. N. Klein, “Microwave-to-Terahertz Detection of Single Cells in Lab-on-Chip Devices”(invited lecturee, Imperial College, London, UK)	43	O
10	04.09.2018, Seminar with lecture: 1. Dzyubenko M., Kamenev Yu., Masalov S., Rodionov V., “Measurement of electrodynamic characteristics of metal strip gratings at the THz range” 2. <u>Bryuzginova N.</u> , Sirenko S., Fisun A., Bilous O., “Biological effects of millimeter waves upon different types of human cells”	13	O O
11	15.11.2018, Seminar with lectures: Dr. Toshio Iguchi, ” Radar Measurement of Precipitation from Space" (GRS-S DLP lecturer, National Institute of Information and Communications Technology, Tokyo, Japan)	37	D
12	27.12.2018, Administrative Meeting: 1) Annual Chapter Chair reporting meeting (Chapter Chair Prof. N. Cherpak) 2) 2018 IEEE International Publication Chapter Encouragement Award Ceremony	67	M, S, O

3.3 Summary of Workshops, Short Courses, and Conferences for 2018

In 2018, our Chapter co-organized and co-sponsored the following IEEE meetings:

- The **38th IEEE International Conference on Electronics and Nanotechnology (ELNANO-2018)**, <http://www.elnano.kpi.ua>. It was held April 24-26, 2018, at the National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute” (NTUU-KPI) in Kyiv, Ukraine. This event is intended to bring together researchers from the areas of nanotechnology, biomedical electronics, signal processing, power electronics, smart grids, and electronic systems from the leading universities, research labs and industry. The conference was co-sponsored by IEEE Ukraine Section and 5 Section’s Chapters. Among others the IEEE Ukraine Section (Kyiv) ED/MTT/CPMT/SSC/COM Societies Joint Chapter and the IEEE Ukraine Section (East) AP/MTT/ED/AES/GRS/NPS Societies Joint Chapter are financial and technical sponsors.

- The **2018 IEEE 17th International Conference on Mathematical Methods in Electromagnetic Theory (MMET-2018)**, Kyiv, Ukraine, July 2-5, 2018, (www.mmet.org/2018/). It is a traditional forum held in Ukraine since 1990. MMET is famous as an efficient interface between the Ukrainian and Western scientists

and engineers in the broad area of modeling and simulation of electromagnetic fields including wave propagation, radiation, scattering, guidance, processing, etc. (full list of topics see here). A characteristic feature of MMET is a stronger emphasis on the analytical and mathematical aspects of research into Electromagnetics.

In 2018, the Conference held in National Aviation University, Kyiv, Ukraine gathered together over 80 scientists, engineers, and invited speakers (including more than 40 IEEE members) from all over the world: the geography of participants from 15 countries including USA, Germany, China, Taiwan, France, Estonia, Turkey, Greece, Egypt, and Ukraine.

Our chapter is the main organizer and sponsor of the Conference.

- Support for **IEEE Ukrainian Student Congress**, October 2-6, 2018 - <http://congress.ieee.org.ua/>

3.4 Special Projects

Previously received funds (AP-S Special Purposes Grant) were used for organizing the 2018 IEEE 17th International Conference on Mathematical Methods in Electromagnetic Theory (MMET-2018). This year, the event held at the National Aviation University in Kyiv, Ukraine - <http://mmet.org/2018/> . The funds requested have been used to support Ukrainian Speakers' travel and accommodation, with preference to young researchers and students.

4. DESCRIPTION OF OTHER ACTIVITIES

4.1 Are there any ways in which your chapter has improved over last year?

Our Chapter carries on a tradition to encourage Ukrainian IEEE members with the awarding ceremony for publication in the IEEE Journals related to the Chapter parent societies (AP/MTT/ED/AES/GRS/NPS). In 2018, as a part of the annual IEEE Publication Chapter Encouragement Award, there were 13 Ukrainian teams of contributors whose papers have been published this year in such IEEE Magazines and Transactions on; among them *IEEE Transactions on Electron Devices*, *IEEE Microwave and Wireless Components Letters*, *IEEE Geoscience and Remote Sensing Letters*, *IEEE Transactions on Plasma Science*, etc.

4.2. Were there any unique or innovative activities within your chapter?

- Collaboration with other IEEE societies and chapters:
 - ✓ In 2018, Dr. Mstyslav Kaliberda represented East Ukraine Joint Chapter at the MTT-S Chapter Chair Meeting (on a travel grant of MTT-S) in the framework of the Asia-Pacific Microwave Conference 2018 in Kyoto, Japan (November 6-9, 2018);
 - ✓ Our member Daryna Pesina has been involved on the planning committee of IEEE Women in Engineering International Leadership Conference (WiE ILC, May 21-22, 2018, San Jose, USA);
- Student involvement and new member recruitment: Chapter committee officers regularly mentor young scientists and PhD students related to the Chapter.
 - ✓ attracting young professionals and women to IEEE is a permanent concern of the Chapter. In 2018, we managed to attract a few new members of the WiE-Ukraine Affinity Group;
 - ✓ our Student member Ms. Dariia Yevtushenko has been selected as a winner of the IEEE AP-S Eugene F. Knott Memorial Pre-Doctoral Research Grant 2018 with her Project "*Diffraction radiation of electron beams from optical nanoresonators: antenna effects and beam diagnostics*".
- 2 Chapter members Prof. Volodymyr Lukin and Dr. Anatoliy Lyubitskii have been elevated to the IEEE Senior Member Grade in 2018

- Chapter organized seminars with foreign lecturers at Usikov Institute for Radiophysics and Electronics NAS of Ukraine (Kharkiv, Ukraine):
 - ✓ Prof. N. Klein, Imperial College London, UK (July 18, 2018)
 - ✓ Prof. Toshio Iguchi (IEEE GRS-S Distinguished Lecturer), National Institute of Information and Communications Technology, Japan (November 15, 2018)
- The Chapter held the End of the Year Party for its members including annual report on Chapter activities in 2018, IEEE Publication Awards Ceremony, and social activities: 67 Chapter members took part.

4.3. Miscellaneous information, elaboration on any of the above topics, or special factors to be considered.

5. ACTIVITIES PLANNED FOR 2019

- **Chapter Elections for 2019-2020** - <http://iee.org.ua/chapter-election/>

This year, and annually our Chapter is involved in co-organizing and co-sponsoring of several IEEE conferences, namely:

- **IEEE 39th International Conference on Electronics and Nanotechnology (ELNANO-2019)** will be held at NTUU "Igor Sikorsky Kyiv Polytechnic Institute" in Kyiv, Ukraine **on April 16-18, 2019**. This event is intended to bring together researchers from the areas of nanotechnology, biomedical electronics and signal processing, power electronics, smart grid and electronic systems from leading universities, research laboratories and industry. For more information, please, see the web-site www.elnano.kpi.ua.
- **2019 IEEE 2nd Ukraine Conference on Electrical and Computer Engineering (UKRCON)**, Lviv, Ukraine. The event will take place on July 2–6, 2019. The 2nd IEEE UKRCON-2019 general theme, Advancing Society Through Applied Physics, Electrical and Computer Engineering, reflects the profound impact of ECE research on our daily lives. For more information, please, see the web-site <https://ukrcon.ieee.org.ua/>

Besides, several times a year our Chapter holds technical meetings with the themed presentations at the Usikov Institute for Radiophysics and Electronics NASU in Kharkiv. These meetings cover multiple topics concerning all aspects of engineering, theoretical and experimental physics, electron devices, geosciences and remote sensing, RF/microwave techniques, etc. This year, we are planning to hold at least 12 such meetings as well as the Annual Chapter Report Meeting including End of the Year Party traditionally held at the end of the year (December 2019).

Funds requested from AES: 300 USD

Preferable way of the funds transfer: wire transfer to the IEEE Ukraine Section CB account:

IEEE Ukraine Section

Account: 806300

Project Code: R8013

For IEEE AP/MTT/ED/AES/GRS/NPS Societies East Ukraine Joint Chapter

- 6. PREPARED BY** Kateryna Arkhypova, East Ukraine Joint Chapter Secretary (2017-2018)

March 1, 2019