Yuriy Mishchenko, PhD

Sr. Applied Scientist
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Employment

2020-current	**Amazon.com, Cambridge, USA**
	Senior Applied Scientist, Alexa Speech
2019-2020	**Amazon.com, Cambridge, USA**
	Senior Research Scientist, Alexa Speech
2018-2019	**Amazon.com, Cambridge, USA**
	Research Scientist, Alexa Speech
2016-2018	**Izmir University of Economics, Izmir, Turkey**
	Associate Professor, Department of Biomedical Engineering
2015-2016	**Toros University, Mersin, Turkey**
	Associate Professor, Department of Computer and Software Engineering
2011-2015	**Toros University, Mersin, Turkey**
	Assistant Professor, Department of Computer and Software Engineering
2008-2010	**Columbia University, New York, NY, USA**
	Postdoctoral Fellow, Department of Statistics and Center for Theoretical Neuroscience
2006-2008	**Janelia Research Campus of Howard Hughes Medical Institute (JRC HHMI), Ashburn, VA, USA**
	Research Associate, Computational Neuroscience
2005-2006	**Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, USA**
	Research Associate, Computational Neuroscience
2003-2004	**North Carolina State University, Raleigh, NC, USA**
	Research Assistant, Department of Physics
2003	**Jefferson Laboratory, Newport News, VA, USA**
	Research Assistant
2000-2003	**North Carolina State University, Raleigh, NC, USA**
	Teaching Assistant, Department of Physics

Education

2004	**Ph.D. in Theoretical Physics, Summa Cum Laude**
	North Carolina State University, Raleigh, NC, USA
	Dissertation title: "Applications of Canonical Transformations and Nontrivial Vacuum Solutions to Flavor Mixing and Critical Phenomena in Quantum Field Theory"
	Advisor: Prof. Dr. C.-R. Ji
2000	**M.S. in Theoretical Physics, Summa Cum Laude**
	National Kiev University of Taras Shevchenko, Kiev, Ukraine
	Thesis title: "Nonperturbative Mass Renormalization in 2+1 Scalar Yukawa Model"
	Advisor: Prof. Dr. I. Simenog
1999	**B.S. in Theoretical Physics, Summa Cum Laude**
	National Kiev University of Taras Shevchenko, Kiev, Ukraine
	Thesis title: "Precision Quantum Mechanical Variational Calculations of Three-Body Coulomb System $(dt\mu)$"
	Advisor: Prof. Dr. I. Simenog

Major National Awards

2013	BAGEP Young Investigator Award, The Science Academy Society of Turkey, Turkey

Other Awards and Honors

2015	2nd Place Award, Signal Processing and Applications Competition, 23rd IEEE Signal Processing and Communications Applications Congress SIU2015, Malatya, Turkey
2014	5th Place Award, 4th Regional Project Competition of East Mediterranean Universities in Turkey, Iskenderum, Turkey
2010	Madison Who's Who Registry of Executives and Professionals, USA
2004	Phi Kappa Phi Honor Society Election, NC Chapter, USA
2002	South-Eastern Universities Research Association (SURA) Graduate Fellowship Award, USA

Research Grants

"Development of more efficient noninvasive brain-machine interfaces", TUBITAK—the Scientific and Technological Research Council of Turkey—ARDEB 1001 Grant, 113E611, 330,000 TL, 2014-2018 *Principal Investigator*

"Founding of Noninvasive Brain-Machine Interfaces Research Laboratory at the Faculty of Engineering at Toros University", Toros University, BAP Grant, TUBAP135001, 10,000 TL, 2013-2014, *Principal Investigator*

"Constraining parameters of Dark Matter particles from observations of Dark Matter in high-speed collision galaxy clusters", ITGAP international travel grant of American Physics Society, 2,000 USD, 2013-2014, *Principal Co-Investigator*

Advised Dissertations and Theses

Doctorate Dissertations:
Hilmi YANAR, Co-Advisor, Mersin University, 2019
Title: "A macroscopic dynamical model of the electroencephalographic brain activity"

Master Theses:
Erhan ONEL, Advisor, Toros University, 2014
Title: "Information management systems and emotional intelligence in information technology"

Administrative Duties

2012-2016	Department Head of the Department of Computer Engineering at the Faculty of Engineering at Toros University
2012-2016	Member of the Steering Committee of the Faculty of Engineering at Toros University

Taught Undergraduate and Graduate Courses

Graduate: Business Applications of Big Data; Machine Learning and Artificial Intelligence; Advanced Algorithms; Data Structures and Algorithms; Convex Optimization; Internet Programming; *Undergraduate:* Special Topics in Machine Learning, Data Science, Numerical Analysis, Numerical Optimization Methods; Concepts of Object Oriented Programming; MATLAB Programming; C/C++ Programming; Java Programming; Information Systems Security; Introduction to Databases; Introductory Physics; Computer Skills

Patents

"Critical Networking Training Method for Deep Neural Networks in Machine Learning", TR2018/06540A2, July 21 2018
"Systems and Methods for Exchanging Information in a Large Group", US12/480325, Dec 18 2012

Languages

English (fluent), Russian (native), Ukrainian (native), Turkish (advanced)

Publications

1. Werchniak A., Chicote R., Mishchenko Y., Droppo J., Condal J., Liu P. Shah A. (2021) Exploring the application of synthetic audio in training keyword spotters. Proc. ICASSP 2021, 7993-7996.

2. Ji C., Mishchenko Y. (2021) General quantum field theory of flavor mixing and oscillations. Universe 7(3), 51, 2021.

3. Liu H., Abhyankar A., Mishchenko Y., Senechal T., Fu G., Kulis B., Stein N., Shah A., Vitaladevuni S. (2020) Metadata-aware end-to-end keyword spotting. Proc. Interspeech 2020, 2282-2286.

4. Jose C., Mishchenko Y., Senechal T., Shah A., Escott A., Vitaladevuni S. (2020) Accurate Detection of Wake Word Start and End Using a CNN. Proc. Interspeech 2020, 3346-3350; arXiv:2008.03790.

5. Gao Y., Mishchenko Y., Shah A., Matsoukas S., Vitaladevuni S. (2020) Towards data-efficient modeling for wake word spotting. In Proceedings of 2020 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp. 7479-7483, IEEE, 2020.

6. Mishchenko Y., Goren Y., Sun M., Beauchene C., Matsoukas S., Rybakov O., Vitaladevuni S. (2019) Low-bit quantization and quantization-aware training for small-footprint keyword spotting. In Proceedings of 18th IEEE International Conference On Machine Learning And Applications (ICMLA), pp. 706-711, IEEE, 2019.

7. Mishchenko Y., Kaya M., Ozbay E., Yanar H. (2019) Developing a 3- to 6-state EEG-based brain-computer interface for a virtual robotic manipulator control. IEEE Transactions on Biomedical Engineering, 66, 977-987. BioRxiv 171025.

8. Aci C., Kaya M., Mishchenko Y. (2019) Distinguishing mental attention states of humans via an EEG-based passive BCI using Machine Learning Methods. Expert systems with applications, 134, 153-166.

9. Mishchenko Y., Yildiz Z. (2019) Development of electroencephalographic brain-machine interfaces. TUBAV Bilim Dergisi, 12, 1.

10. Kaya M., Binli M. K., Ozbay E., Yanar H., Mishchenko Y. (2018) A large electroencephalographic motor imagery dataset for electroencephalographic brain computer interfaces. Scientific Data, 5, 180211.

11. Mishchenko Y., Kaya M., Comert M. (2017) A brain-computer interface detection of right and left hand movement imageries from EEG data using the SVM machine learning method. TUBAV Bilim Derigisi, 10, 1.

12. Akirmak O. O., Tatar C., Altun Z., Mishchenko Y. (2017) Design of an accessible, powered myoelectrically controlled hand prosthesis. TEM journal, 6 (3), 479.

13. Mishchenko Y., Ji C.-R. (2017) Dark matter phenomenology of high speed galaxy cluster collisions. The European Physical Journal C, 77, 505; arXiv:1511.00597.

14. Mishchenko Y. (2016) Consistent estimation of complete neuronal connectivity in large neuronal populations using sparse "shotgun" neuronal activity sampling. Journal of Computational Neuroscience, 41, 157.

15. Mishchenko Y. (2016) Recent advances in neural connectivity inference problem for very large scale calcium imaging, in Neuroimaging (*book chapter*). SM Group Open Access Ebooks (SMG eBooks), *www.smgebooks.com/neuroimaging*.

16. Mishchenko Y. (2016) Application of the radial distribution function for quantitative analysis of neuropil microstructure in stratum radiatum of CA1 region in hippocampus. Medical Research Archives, 4(4), 10.18103/mra.v4i4.604.

17. Mishchenko Y. (2015) Variability in cellular gene expression profiles and homeostatic regulation. BioRxiv 021048.

18. Mishchenko Y. (2015) A function for fast computation of large discrete Euclidean distance transforms in three or more dimensions in Matlab. Signal, Image and Video Processing, 9, 19.

19. Mishchenko Y. (2014) Oscillations in rational economies. Plos ONE, 9(2), e87820.

20. Marblestone A., Daugharthy E., Kalhor R., Peikon I., Kebschull J., Shipman S., Mishchenko Y., Lee J. H., Kording K., Boyden E., Zador A., Church G. (2014) Rosetta Brains: A Strategy for Molecularly-Annotated Connectomics. arXiv:1404.5103.

21. Marblestone A., Daugharthy E., Kalhor R., Peikon I., Kebschull J., Shipman S., Mishchenko Y., Dalrymple D., Zamft B., Kording K., Boyden E., Zador A., Church G. (2013) Conneconomics: The Economics of Large-Scale Neural Connectomics. BioRxiv 001214.

22. Rah J.-C., Bas E., Colonell J., Mishchenko Y., Karsh B., Fetter R., Myers E., Chklovskii D., Svoboda K., Harris T., Isaac J. (2013) Thalamocortical input onto layer 5 pyramidal neurons measured using quantitative large-scale array tomography. Frontiers in Neural Circuits, 7, 177.

23. Mishchenko Y., Paninski L. (2012) A Bayesian compressed-sensing approach for reconstructing neural connectivity from subsampled anatomical data. Journal of Computational Neuroscience, 33(2), 371.

24. Rivera-Alba M., Vitaladevuni S., Mishchenko Y., Lu Z., Takemura S., Scheffer L., Meinertzhagen I., Chklovskii D., de Polavieja G. (2011) Wiring economy and volume exclusion determine neuronal placement in the Drosophila brain. Current Biology, 21, 2000.

25. Mishchenko Y. and Paninski L. (2011) Efficient methods for sampling spike trains in networks of coupled neurons. Annals of Applied Statistics, 5, 1893.

26. Mishchenko Y., Vogelstein J., Paninski L. (2011) A Bayesian approach for inferring neuronal connectivity from calcium fluorescent imaging data. Annals of Applied Statistics, 5, 1229.

27. Mishchenko Y. (2011) Reconstruction of complete connectivity matrix for connectomics by sampling neural connectivity with fluorescent synaptic markers. Journal of Neuroscience Methods, 196, 289.

28. Mishchenko Y. (2010) On optical detection of densely labeled synapses in neuropil and mapping connectivity with combinatorially multiplexed fluorescent synaptic markers. PLoS ONE 5(1): e8853.

29. Mishchenko Y., Hu T., Spacek J., Mendenhall J., Harris K., Chklovskii D. (2010) Ultrastructural analysis of hippocampal neuropil from the connectomics perspective. Neuron, 67, 1009.

30. Mishchenko Y. (2009) Nontrivial vacuum solutions in flavor mixing and critical phenomena (*book*). VDM Verlag: Saarbrucken, 228p.

31. Mishchenko Y. (2009) Automation of 3D reconstruction of neural tissue from large volume of conventional serial section transmission electron micrographs. Journal of Neuroscience Methods, 176, 276.

32. Mishchenko Y. (2008) Strategies for identifying exact structure of neural circuits with broad light microscopy connectivity probes. Nature Precedings, retrieved http://hdl.handle.net/10101/npre.2009.2669.2.

33. Ji C.-R., Mishchenko Y., Radyushkin A. (2006) Higher Fock state contributions to the generalized parton distribution of pion. Physical Review D, 73, 114013.

34. Mishchenko Y. (2006) Remedy for the fermion sign problem in the diffusion Monte Carlo method for few fermions with antisymmetric diffusion process. Physical Review E, 73, 026706.

35. Mishchenko Y., Ji C.-R. (2005) General formulation of flavor mixing in Quantum Field Theory, in O. Kovras (ed.): Focus on Quantum Field Theory (*book chapter*). Nova Science Publisher, pp115-149.

36. Bakker B., DeWitt M., Ji C.-R., Mishchenko Y. (2005) Restoring the equivalence between the light-front and manifestly covariant formalisms. Physical Review D, 72, 076005.

37. Mishchenko Y., Ji C.-R. (2005) A novel variational approach for quantum field theory: example of study of the ground state and phase transition in nonlinear sigma model. International Journal of Modern Physics A, 20, 3488.

38. Mishchenko Y., Ji C.-R. (2005) Exploring properties of dark and visible mass distribution on different scales in the Universe. International Journal of Modern Physics A, 20, 3124.

39. Ji C.-R., Mishchenko Y. (2005) Time to space conversion in quantum field theory of flavor mixing. Annals of Physics, 315, 488.

40. Mishchenko Y. (2004) Applications of Canonical Transformations and Nontrivial Vacuum Solutions to Flavor Mixing and Critical Phenomena in Quantum Field Theory (*Ph.D. Dissertation, Advisor C.-R. Ji*), UMI-31-54334, 226pp.

41. Mishchenko Y., Ji C.-R. (2004) Distribution of mass in galaxy cluster CL0024 and the particle mass of dark matter, in J. Val Blain (ed.): Progress in Dark Matter Research (*book chapter*). Nova Science Publisher, pp217-239.

42. Ji C.-R., Mishchenko Y., Shalaby A. (2004) Duality and canonical transformations in the scalar field theory, in S. G. Pandalai (ed.): Recent Developments in Physics vol. 5 (*book chapter*). Transworld Research Network, pp1487-1510.

43. Capolupo A., Ji C.-R., Mishchenko Y., Vitiello C.-R. (2004) Phenomenology of flavor oscillations with nonperturbative effects from quantum field theory. Physics Letters B, 594, 135.

44. Mishchenko Y., Ji C.-R. (2003) Molar mass estimate of dark matter from the dark mass distribution measurements. Physical Review D, 68, 063503.

45. Ji C.-R., Mishchenko Y. (2002) The general theory of quantum field mixing. Physical Review D, 65, 096015.

46. Ji C.-R., Mishchenko Y. (2001) Nonperturbative vacuum effect in the quantum field theory of meson mixing. Physical Review D, 64, 076004.

47. Mishchenko Y. (2000) Nonperturbative Mass Renormalization in 2+1 Scalar Yukawa Model (*M.Sc. Thesis, Advisor I. Simenog*). Unpublished thesis.

48. Mishchenko Y. (1999) Precision Quantum Mechanical Variational Calculations of Three-Body Coulomb System ($dt\mu$) (*B.Sc. thesis, Advisor I. Simenog*). Unpublished thesis.

Talks and Conference Presentations

1. Y. Mishchenko, Y. Goren, M. Sun, C. Beauchene, S. Matsoukas, O. Rybakov, S. Vitaladevuni "Low-bit quantization and quantization-aware training for small-footprint keyword spotting." 18th IEEE International Conference on Machine Learning and Applications (ICMLA) 2019, Boca Raton, FL, USA, 16-19 Dec 2019.

2. Y. Mishchenko, Y. Goren, M. Sun, C. Beauchene, S. Matsoukas, O. Rybakov, S. Vitaladevuni "Low-bit quantization and quantization-aware training for small-footprint keyword spotting." Amazon Machine Learning Conference 2019, Seattle, WA, USA, 10-12 July 2019.

3. M. Kaya, C. Aci, Y. Mishchenko "A passive brain-computer interface for monitoring mental attention state." 26th IEEE Signal Processing and Communications Applications Conference SIU2018, Izmir, Turkey, 2-5 May 2018.

4. Y. Mishchenko "Developing a 3 to 6 state slow cortical potentials brain computer interface for high performance control of a 3D robotic manipulator." Neurotalk-2017, Barcelona, Spain, May 22-24 2017.

5. Y. Mishchenko, M. Kaya, H. Yanar, E. Ozbay "Characterization of the key properties of electroencephalographic signal for noninvasive brain machine/computer interface applications." SfN Meeting 2016, San Diego, CA, USA, November 12-16 2016.

6. E. Ozbay, Y. Mishchenko, M. Kaya, H. Yanar "Control of a virtual robotic hand manipulator using a non-invasive EEG-based brain-machine interface", 1st International Mediterranean Science and Engineering Congress IMSEC2016, Adana, Turkey, October 26-28 2016.

7. H. Yanar, Y. Mishchenko "A hidden Markov Model of electroencephalographic brain activity for advanced EEG-based brain computer interfaces." 24th IEEE Signal Processing and Communications Applications Conference SIU2016, Zonguldak, Turkey, May 16-19 2016.

8. M. Kaya, H. Yanar, Y. Mishchenko "Developing computational infrastructure for an EEG-based brain computer interface." 24th IEEE Signal Processing and Communications Applications Conference SIU2016, Zonguldak, Turkey, May 16-19 2016.

9. Y. Mishchenko "Reconstructing functional neural circuits with single cell resolution: Statistical methods for inferring neural network topology from large scale neural activity imaging data." Invited seminar at Janelia Research Campus of Howard Hughes Medical Institute, Ashburn, VA, USA, November 19 2015.

10. Y. Mishchenko, M. Kaya "Detecting the attention state of an operator in continuous attention task using EEG-based Brain-Computer Interface." 23rd IEEE Signal Processing and Communications Applications Congress SIU2015, Malatya, Turkey, May 16-19 2015.

11. M. Kaya, Y. Mishchenko "The system for estimating operator's attention state." Mersin University R&D Project Fair 2015, Mersin, Turkey, May 7-8 2015.

12. E. Onel, Y. Mishchenko, M. Miman "The relationships between use features of Information Management Systems." Congress on Information Management Systems YBS2014, Istanbul, Turkey, October 16-17 2014.

13. M. Kaya, Y. Mishchenko, H. Seckin "Methods for direct brain-computer communications using a Brain-Computer Interface." 4th Regional Project Fair of East Mediterranean Universities, Iskenderum, Turkey, April 30 2014.

14. O. O. Akirmak, M. Miman, Y. Mishchenko "A system for lane-tracking suitable for day and night conditions." 4th Regional Project Fair of East Mediterranean Universities, Iskenderum, Turkey, April 30 2014.

15. Y. Mishchenko "Reconstructing functional connectivity in complete neural populations by randomized sparse sampling." COSYNE 2014 Conference, Salt Lake City, UT, USA, February 27 - March 2 2014.

16. Y. Mishchenko "Fluorescent co-localization synaptic markers for connectome reconstructions." 8th FENS Forum of Neuroscience, Barcelona, Spain, June 14-18 2012.

17. Y. Mishchenko and L. Paninski "Efficient methods for sampling spike trains in networks of coupled neurons." COSYNE 2011 Conference, Salt Lake City, UT, USA, February 28 - March 1 2011.

18. Y. Mishchenko "Bayesian inference of neural connectivity from calcium imaging data in the presence of hidden inputs." *Invited seminar at Center for Theoretical Neuroscience, Columbia University, New York, NY, USA*, December 3 2010.

19. J. Vogelstein, T. Machado, Y. Mishchenko, A. Packer, R. Yuste and L. Paninski "Methods for in vitro neural circuit inference from population calcium imaging data." COSYNE 2010 Conference, Salt Lake City, UT, USA, February 28 - March 1 2010.

20. J. Vogelstein, Y. Mishchenko, A. Packer, T. Machado, R. Yuste, L. Paninski "Towards confirming neural circuit inference from population calcium imaging", NIPS 2009 Workshop on Connectivity Inference in Neuroimaging, Whistler, Canada, December 12 2009.

21. Y. Mishchenko, J. Vogelstein, L. Paninski "Statistical reconstruction of neural connectivity from the data produced using stochastically Cre/Lox guided fluorescent synaptic marker GRASP", SfN Meeting 2009, Chicago, IL,USA, September 17-21 2009.

22. J. Vogelstein, Y. Mishchenko, A. Packer, T. Machado, R. Yuste, L. Paniski, "Towards confirming neural circuit inference from population calcium imaging." SfN Meeting 2009, Chicago, IL, USA, September 17-21 2009.

23. Y. Mishchenko "Strategies for recovering exact structure of neural circuits with broadly targeted fluorescent connectivity probes." *Invited seminar at Princeton Theoretical Group, Princeton University, Princeton, NJ, USA*, April 23 2009.

24. Y. Mishchenko, "Using Brainbow and GRASP for detailed reconstruction of complete circuits with light microscopy." COSYNE 2009 Conference, Salt Lake City, UT, USA, February 26 - March 03 2009.

25. S. Vitaladevuni, Y. Mishchenko, A. Genkin, D. Chklovskii, K. Harris, "Mitochondria detection in electron microscopy images." MIAAB 2008 Workshop, New York, NY, USA, September 06 2008.

26. Y. Mishchenko, J. Spacek, J. Mendenhall, K. Harris and D. Chklovskii, "Full electron microscopy reconstructions reveal organization of hippocampus neuropil at nanometer resolution." SfN Meeting 2008, Washington, DC, USA, November 15-19 2008.

27. S. Vitaladevuni, Y. Mishchenko, A. Genkin and D. Chklovskii, "Brain circuit reconstruction from electron micrographs." JRC HHMI Meeting "What can computer vision do for neuroscience and vice versa? 2010", Ashburn, VA, USA, September 14-17 2008.

28. M. Rivera-Alba, Y. Mishchenko, S. Vitaladevuni, R. Fetter, Z. Lu, G. de Polavieja, I. Meinertzhagen, D. Chklovskii, "Reconstructing the first stage of visual processing." JRC HHMI Meeting "What can computer vision do for neuroscience and vice versa? 2008", Ashburn, VA, USA, September 14-17 2008.

29. K. Harris, B. Shi, J. Spasek, J. Mendenhall, Y. Mishchenko, D. Chklovskii "Using neuroinformatics tools to investigate and share high-resolution full volume reconstructions of brain neuropil." Neuroinformatics 2008 Meeting, Stokholm, Sweden, September 7-9 2008.

30. Y. Mishchenko, A. Genkin, D. Chklovskii, "Automation of reconstruction of neuropil from serial electron micrographs: current results and future prospects." JRC HHMI Meeting "Neural Circuit Reconstruction", Ashburn, VA, USA, September 23-26 2007.

31. D. Chklovskii, Y. Mishchenko, J. Spacek, K. Harris, "Analysis of the neuropil micro-architecture using semi-automated 3D reconstructions from electron microscope." JRC HHMI Meeting "Neural Circuit Reconstruction", Ashburn, VA, USA, September 23-26 2007.

32. K. Harris, J. Spacek, Y. Mishchenko, D. Chklovskii, "What we can learn about circuitry from high resolution, full volume reconstruction of brain neuropil." JRC HHMI Meeting "Neural Circuit Reconstruction", Ashburn, VA, USA, September 23-26 2007.

33. Y. Mishchenko, D. Chklovskii, "Large scale electron microscope reconstructions of brain structure." UKC 2007 Meeting, Washington, DC, USA, August 9-12 2007.

34. C.-R. Ji, Y. Mishchenko, "Application of particle physics to Cosmology: correlation of the mass scale between dark matter and Quantum Chromodynamics." UKC 2007 Meeting, Washington, DC, USA, August 9-12 2007.

35. Y. Mishchenko, D. Chklovskii, "Automated large scale reconstruction of neural circuits using electron microscopy." Annual Meeting of the Sloan-Swartz Center for Theoretical Neurobiology, Sand Diego, CA, USA, July 28-31 2007.

36. Y. Mishchenko, A. Koulakov, D. Chklovskii, "Neuronal circuits reconstruction with full 3D segmentation of serial thin section electron micrographs." CSHL Meeting "Neuronal Circuits: From Structure To Function", Cold Spring Harbor, NY, USA, March 9-12 2006.

37. Y. Mishchenko, A. Koulakov, D. Chklovskii, "Automated 3D reconstruction of neuronal circuitry from serial electron micrographs." SfN Meeting 2005, Washington, DC, USA, November 12-16 2005.

38. C.-R. Ji, Y. Mishchenko, "Correlations of Mass Distributions between Dark Matter and Visible Matter." KIAS-APCTP-DMRC Workshop "The Dark Side of the Universe", Seoul, Korea, May 24-26 2005.

39. Y. Mishchenko, C.-R. Ji, "Exploring the properties of dark and visible mass distributions on different scales in the universe." DPF Meeting 2004, Riverside, CA, USA, August 26-31 2004.

40. Y. Mishchenko, C.-R. Ji, "New approach to variational method for the quantum field theory: example of critical phenomena in 2+1 dimensional nonlinear sigma model." DPF Meeting 2004, Riverside, CA, USA, August 26-31 2004.

41. Y. Mishchenko, C.-R. Ji, "Phase structure of ϕ^4_{1+1} scalar theory with non-zero magnetic field." DPF meeting 2002, Williamsburg, VA, USA, May 24-28 2002.

42. Y. Mishchenko, C.-R. Ji, "The general quantum field theory of flavor mixing." SESAPS Meeting 2002, Auburn, AL, USA, October 31 - November 2 2002.

43. Y. Mishchenko, C.-R. Ji, "Nonperturbative vacuum effect in meson mixing." SESAPS Meeting 2001, Charlottesville, VA, USA, November 4-6 2001.

44. Y. Mishchenko, I. Simenog, "Nonperturbative mass renormalization in 2+1 scalar Yukawa model." Annual Student Conference of National Kiev University of Taras Shevchenko, Kiev, Ukraine, May 2000.

45. Y. Mishchenko, I. Simenog, "Variational high-precision calculations of the meso-molecules ground states." Annual Student Conference of National Kiev University of Taras Shevchenko, Kiev, Ukraine, May 1999.